Case No. 24-0014-EL-BLN

Part 1 of 9

Letter of Notification for the Vassell – Green Chapel 345 kV Transmission Line Project

AEP OHIO TRANSMISSION COMPANY

An AEP Company

BOUNDLESS ENERGY™

PUCO Case No. 24-0014-EL-BLN

Submitted to:
The Ohio Power Siting Board
Pursuant to Ohio Administrative Code
Section 4906-6-05

Submitted by:
AEP Ohio Transmission Company, Inc.

January 19, 2024

LETTER OF NOTIFICATION

AEP Ohio Transmission Company, Inc.

Vassell – Green Chapel 345 kV Transmission Line Project

4906-6-05 Accelerated Application Requirements

AEP Ohio Transmission Company, Inc. (the "Company") provides the following information to the Ohio Power Siting Board ("OPSB") in accordance with the accelerated application requirements of Ohio Administrative Code Section 4906-6-05.

4906-6-05(B) General Information

B(1) Project Description

The name of the project and applicant's reference number, names and reference number(s) of resulting circuits, a brief description of the project, and why the project meets the requirements for a Letter of Notification.

The Company is proposing the Vassell – Green Chapel 345 kV Transmission Line Project (the "Project"), located within Berkshire, Harlem, and Trenton townships in Delaware County, Ohio and Jersey and Monroe townships in Licking County, Ohio. The Project involves constructing approximately 13 miles of new 345 kV transmission line between the existing Vassell 345 kV Station (approved Case No. 11-1313-EL-BSB) and the proposed Green Chapel 345 kV Station (approved Case No. 23-0028-EL-BLN). The Project will use the Company's Breakthrough Overhead Line Design (BOLD), consisting of steel monopole structures on a new 150-foot right-of-way. In addition to the Project, the Company has identified the need for a second 345 kV transmission line and the Curleys Station; both of which will be filed under separate applications. The location of the Project is shown on Maps 1 and 2 in Appendix A.

The Project meets the requirements for a Letter of Notification (LON) as defined by Items 1(d)(ii) of Appendix A to Ohio Administrative Code Section 4906-1-01, *Application Requirement Matrix for Electric Power Transmission Lines*:

> *(1) New construction, extension, or relocation of single or multiple circuit electric power transmission line(s), or upgrading existing transmission or distribution line(s) for operation at a higher transmission voltage, as follows:*
>
> > *(d) Line(s) primarily needed to attract or meet the requirements of a specific customer or customers as follows:*
> >
> > > *(ii) Any portion of the line is on property owned by someone other than the specific customer or applicant.*

The Project has been assigned Case No. 24-0014-EL-BLN.

B(2) Statement of Need

If the proposed Letter of Notification project is an electric power transmission line or gas or natural gas transmission line, a statement explaining the need for the proposed facility.

The New Albany area continues to see some of the fastest growing electric demand in the AEP system. The robust economic development activity in New Albany is creating a continued influx of new customer interconnection requests.

The approximate load in the New Albany area today is 500 MW and the demand is expected to exceed 2,000 MW by the end of 2027 and will continue to grow in future years. Due to the projected customer load, existing facilities that serve the area including the 345 kV circuits between Corridor Station and Vassell Station will exceed their thermal capacities under certain scenarios.

The Company proposes to introduce new 345 kV sources into the area to address identified planning criteria violations by constructing two new 345 kV transmission lines between the Company's Vassell Station and the Green Chapel and Curleys Stations, respectively. Several projects in the New Albany area will be needed address issues created by the projected load growth and to serve the current demand of more than 10 new customer requests in the area.

Failure to move forward with the proposed Project and future projects will result in the inability to serve the various customer load expectations (existing and new customers). In addition to the direct customer service, failure to move forward with the Project would have a negative impact on economic development in the area.

Each customer need was presented and reviewed with stakeholders between February 2022 and April 2023, at the PJM SRRTEP or TEAC Meetings. The solution to the Project was presented in the December 5, 2023, PJM TEAC Meeting (see Appendix B).

B(3) Project Location

The applicant shall provide the location of the project in relation to existing or proposed lines and substations shown on an area system map of sufficient scale and size to show existing and proposed transmission facilities in the Project area.

The location of the Project in relation to existing transmission lines and substations is shown on Map 1, in Appendix A. Map 2, in Appendix A, identifies the Project components on a 2022 aerial photograph.

B(4) Alternatives Considered

The applicant shall describe the alternatives considered and reasons why the proposed location or route is best suited for the proposed facility. The discussion shall include, but not be limited to, impacts associated with socioeconomic, ecological, construction, or engineering aspects of the project.

The Company conducted a siting study for the Project, which evaluated five suitable Alternative Routes for connecting the existing Vassell 345 kV Station and the future Green Chapel 345 kV Station (Project endpoints). The Alternative Routes considered are shown in Appendix A, Map 4. The Siting Study is presented in its entirety in Appendix D. Because the second 345 kV line is in the same vicinity, the Siting Study also covers the proposed Vassell – Curleys 345 kV Transmission Line (to be filed under a separate application).

The goal of selecting a suitable route for the Project was to minimize impacts on land use and natural and cultural resources while avoiding circuitous routes, significantly higher costs, and non-standard design requirements. Based on quantitative and qualitative analysis, field examination, and landowner and stakeholder input, the Company concluded that the Project's Proposed Route is the most feasible and appropriate route for the Project.

The Proposed Route was selected because it represents a direct, non-circuitous option for connecting the Project endpoints, which minimizes effects to the built and natural environment by primarily paralleling parcel boundaries of properties with compatible uses, minimizes impacts to nearby residences, reduces interferences with existing infrastructure, and optimizes constructability factors such as construction schedule, access, and cost. Lastly, the Proposed Route for the Project was considered in conjunction with the second 345 kV transmission proposed in the area, the Vassell – Curleys 345 kV Transmission Line (to be filed under a separate application) to minimize overall impacts to the community.

Overall, the Proposed Route represents the most suitable location and most appropriate solution for meeting the customers' and Company's needs in the area.

B(5) Public Information Program

The applicant shall describe its public information program to inform affected property owners and tenants of the nature of the project and the proposed timeframe for project construction and restoration activities.

The Project's public communications and outreach process began in early 2023, when the Company initiated stakeholder engagement by coordinating with local governments and agencies. Company representatives invited landowners within the Project area to in-person open house meetings, conducted on May 2 and May 3, 2023, and provided a link to the Project website to access information via a virtual open house. The landowners were also provided with contact information for the Company's outreach specialist and were encouraged to submit comments and questions.

Additionally, the Company will inform affected property owners and tenants about this Project through several different mediums. Within seven days of filing this LON, the Company will issue a public notice in a newspaper of general circulation in the Project area. The notice will comply with all requirements of OAC Section 4906-6-08(A)(1-6). Further, the Company will mail a letter, via first class mail, to affected landowners, tenants, contiguous owners and any other landowner the Company may approach for an easement necessary for the construction, operation, or maintenance of the Project. The letter will comply with all requirements of OAC Section 4906-6-08(B). The Company maintains a website (http://aeptransmission.com/ohio/) which hosts an electronic copy of this LON and the public notice of this LON. An electronic copy of the LON will be served to the public library in each political subdivision affected by this Project. In addition, the Company retains ROW land agents that discuss Project timelines, construction and restoration activities and convey this information to affected owners and tenants.

B(6) Construction Schedule

The applicant shall provide an anticipated construction schedule and proposed in-service date of the project.

Construction of the Project is planned to begin in October 2024 with an anticipated in-service date of April 2026.

B(7) Area Map

The applicant shall provide a map of at least 1:24,000 scale clearly depicting the facility with clearly marked streets, roads, and highways, and an aerial image.

Maps 1 and 2, in Appendix A, identify the location of the Project area on United States Geological Survey 1:24,000 topographic quadrangle maps (Jersey, Johnstown, and Sunbury). Appendix A, Map 2 shows the Project area on a 2022 aerial photograph.

To visit the northern terminus of the Project from downtown Columbus, Ohio, take I-670 E towards the airport for 0.7 miles, then take exit 5C to continue on I-71 N towards Cleveland for 22.1 miles. Take exit 131 on the right for US-36 E for 3.7 miles. Continue straight onto W Cherry Street for 0.5 mile before turning right onto S Morning Street. Continue onto OH-37 E/ E Granville Street for 0.7 mile. The Company's existing Vassell 345 kV Station is located on the right, approximately 0.2 mile east of Joe Walker Road.

B(8) Property Agreements

The applicant shall provide a list of properties for which the applicant has obtained easements, options, and/or land use agreements necessary to construct and operate the facility and a list of the additional properties for which such agreements have not been obtained.

A list of properties required for the Project are provided in Appendix C. The easement form exhibit provided in Appendix C represents the minimum easement rights the Company would require in order to construct, operate, and maintain these facilities.

B(9) Technical Features

The applicant shall describe the following information regarding the technical features of the project.

B(9)(a) Operating characteristics, estimated number and types of structures required, and right-of-way and/or land requirements.

The Vassell – Green Chapel 345 kV Transmission Line is estimated to include the following:

Voltage:	345 kV
Conductors:	(3) 2-Bundle 1590 kCM Falcon ACSS (54/19)
Static Wire:	2x (1) 144 Ct OPGW
Insulators:	Polymer
ROW Width:	150 feet
Structure Type:	Forty (40) Steel monopole, V-String insulators, tangent structures on custom concrete pier with anchor bolt foundation Seven (7) Steel monopole, suspension insulators, running corner structures on custom concrete pier with anchor bolt foundation Seventeen (17) Steel monopole, strain insulator, deadend structure on concrete pier with anchor bolt foundation

B(9)(b) Electric and Magnetic Fields

For electric power transmission lines that are within one hundred feet of an occupied residence or institution, the production of electric and magnetic fields during the operation of the proposed electric power transmission line.

B(9)(b)(i) Calculated Electric and Magnetic Field Strength Levels

i) Calculated Electric and Magnetic Field Levels

Two residences are located within 100 feet of the Project.

Three loading conditions were examined: (1) Normal Maximum Loading, (2) Emergency Loading, and (3) Winter Normal Conductor Rating, consistent with the OPSB requirements. Normal Maximum Loading represents the peak flow expected with all system facilities in service; daily/hourly flows fluctuate below this level. Emergency loading is the maximum current flow during unusual (contingency) conditions, which exist only for short periods of time. Winter normal (WN) conductor rating represents the maximum current flow that a line, including its terminal equipment, can carry

during winter conditions. **It is not anticipated that this circuit of this line would operate at its WN rating in the foreseeable future.**

Electric and Magnetic Field (EMF) levels were computed one meter above ground under the line and at the ROW edges (75/75 feet, left/right, of centerline).

The Company's results were calculated using EPRI's EMF Workstation 2015 software and are summarized below.

Vassell – Green Chapel 345 kV					
Condition	**Phase Current (A)**	**Phasing Arrangements**	**Sag (feet)**	**Electric Field (kV/m)***	**Magnetic Field (mG)***
(1) Normal Max. Loading^	1313.56	A-B-C	31.0	(0.43/0.87/0.3)	(18.04/25.24/11.85)
(2) Emergency Line Loading^^	1901.65	A-B-C	44.9	(0.51/1.19/0.31)	(32.41/50.87/19.82)
(3) Winter Conductor Rating^^^	6623.10	A-B-C	31.0	(0.43/0.87/0.3)	(89.21/125.98/59.82)

*EMF levels (left ROW edge/maximum/right ROW edge) computed one meter above ground at the point of minimum ground clearance, assuming balanced phase currents and 1.0 P.U. Voltages. ROW width is 75 feet (left) and 75 feet (right) of centerline, respectively.

^Peak line flow expected with all system facilities in service.
^^Maximum flow during a critical system contingency
^^^Maximum continuous flow that the line, including its terminal equipment, can withstand during winter conditions.

For power-frequency EMF, IEEE Standard C95.6TM-2002 recommends the following limits:

	General Public	Controlled Environment
Electric Field Limit (kV/m)	5.0	20.0
Magnetic Field Limit (mG)	9040	27,100

The above EMF levels are well within the limits specified in IEEE Standard C95.6TM-2002. Those limits have been established to "prevent harmful effects in human beings exposed to electromagnetic fields in the frequency range of 0-3 kHz."

B(9)(b)(ii) Design Alternatives

A discussion of the applicant's consideration of design alternatives with respect to electric and magnetic fields and their strength levels, including alternate conductor configuration and phasing, tower height, corridor location, and right-of-way width.

The Company did not consider design alternatives due to EMF and their strength levels. Transmission lines, when energized, generate EMF. Laboratory studies have failed to establish a strong correlation between exposure to EMF and effects on human health. However, some people are concerned that EMF has impacts on human health. Due to these concerns, EMF associated with the new circuits was calculated in the table above. The EMF was computed assuming the highest possible EMF values that could exist along the proposed transmission line. Normal daily EMF levels will operate below these maximum load conditions. Based on studies from the National Institutes of Health, the magnetic field (measured in milliGauss, or mG) associated with emergency loading at the highest EMF value for this transmission line, is lower than those associated with normal household appliances like microwaves, electric shavers and hair dryers. For additional information regarding EMF, the National Institute of Health has posted information on their website:

https://www.niehs.nih.gov/health/materials/electric_and_magnetic_fields_associated_with_the_use_of_electric_power_questions_and_answers_english_508.pdf

B(9)(b)(ii)(c) Project Cost

The estimated capital cost of the project.

The cost estimate for the proposed Project is comprised of applicable tangible and capital costs, is approximately $104.5 million using a Class 4 estimate. Pursuant to the PJM OATT, the costs for this

Project will be recovered in the AEP Ohio Transmission Company Inc.'s FERC formula rate (Attachment H-20 to the PJM OATT) and allocated to the AEP Zone.

B(10) Social and Ecological Impacts

The applicant shall describe the social and ecological impacts of the project:

B(10)(a) Operating Characteristics

Provide a brief, general description of land use within the vicinity of the proposed project, including a list of municipalities, townships, and counties affected.

The Project is located in Berkshire, Trenton, and Harlem Townships within Delaware County, Ohio and in Monroe and Jersey Townships within Licking County, Ohio. The northern portion of the Project is bounded by the City of Sunbury and the cities of Johnstown and New Albany are located in the southeastern portion of the Project area. Cultivated farmland is the dominant land use for the Project area, followed by residential development, as classified by the county auditors or identified during field review. According to plans acquired from local governments and agencies, suburban sprawl with mixed residential-commercial growth is anticipated north of New Albany and west of Johnstown, which is located near the proposed Green Chapel Station.

Residential areas are primarily clustered around US-62 near Fancher Road and Green Chapel Road, south of OH-37 near the existing Kammer – Dumont Transmission Line, and in the central portion of the Project. Additionally, the Miller Memorial United Methodist Church is located approximately 980 feet from the centerline of the Project at the intersection of Millers Church Road and US-62. There are no schools, parks, cemeteries, wildlife management areas, or nature preserve lands within 1,000 feet of the centerline of the Project.

B(10)(b) Agricultural Land Information

Provide the acreage and a general description of all agricultural land, and separately all agricultural district land, existing at least sixty days prior to submission of the application within the potential disturbance area of the project.

The Project occupies approximately 230 acres. Based on email correspondence with the Delaware County Auditor's office on December 18, 2023, no properties registered as agricultural district land are crossed by the Project. Based on email correspondence with the Licking County Auditor's office on October 8, 2023, three properties registered as agricultural district land are crossed by the Project. The Licking County Auditor confirmed that the existing list of parcels is current and accurate on January 17, 2024. Overall, the Project crosses a combined 20.3 acres of agricultural district land in Licking County. However, agricultural impacts will be minimized, as the proposed structures are monopoles which reduces the footprint and agricultural actives are a compatible and permitted use with a transmission right-of-way.

The Project occupies approximately 230 acres. Approximately 189 acres of the site has historically been used for row crop land and 13.7 acres has historically been used for pasture/hayfields.

Two (2) Ohio Department of Agriculture (ODA) conservation easements are located approximately 0.4 mile east of Center Village Road and Edwards Road (see Map 2 in Appendix A). However, the Project does not cross either of these (or any other) ODA conservation easements.

B(10)(c) Archaeological and Cultural Resources

Provide a description of the applicant's investigation concerning the presence or absence of significant archaeological or cultural resources that may be located within the potential disturbance area of the project, a statement of the findings of the investigation, and a copy of any document produced as a result of the investigation.

The Company's consultant completed Phase I Archaeological and Phase I History/Architectural surveys, which involved subsurface testing and visual inspection for an area encompassing the Project. No previously unrecorded resources that were identified were considered as being landmarks or eligible for the National Register of Historic Places. As a result, the Company recommended to the SHPO that the Project would have no adverse effect on historic properties and no further cultural resource work would be necessary. In their response, dated January 8, 2024, SHPO supported the consultant's recommendations. See Appendix E.

B(10)(d) Local, State, and Federal Agency Correspondence

Provide a list of the local, state, and federal governmental agencies known to have requirements that must be met in connection with the construction of the project, and a list of documents that have been or are being filed with those agencies in connection with siting and constructing the project.

A Notice of Intent will be filed with the Ohio Environmental Protection Agency for authorization of construction stormwater discharges under General Permit OHC000006. The Company will also coordinate stormwater permitting needs with the appropriate local entities as required. The Company will implement and maintain best management practices (BMPs) as outlined in the Project-specific Storm Water Pollution Prevention Plan (SWPPP) to minimize erosion control sediment to protect surface water quality during storm events.

Wetland and stream delineation field surveys were completed within the Proposed Route's 150-foot-wide right-of-way (ROW) for the Project by the Company's consultant in June 2023 and between September to December 2023 (see Appendix F). The Company's consultant identified a total of four palustrine emergent (PEM) wetlands, 10 palustrine forested (PFO) wetlands, two PEM/PFO wetland complexes, and one palustrine scrub-shrub (PSS)/PFO wetland complex within the proposed 150-foot ROW. Additionally, 13 streams (six perennial streams, five intermittent streams, and two ephemeral streams) and one pond were identified within the proposed 150-foot ROW.

Ponds and streams are not anticipated to be disturbed by construction activities, as they will be spanned or the Company will install temporary timber matting above the Ordinary Highwater Mark (OWHM) to avoid permanent impacts. Based on preliminary engineering design, four structures are currently located within delineated PFO wetlands. Additionally, approximately 8.2 acres of ROW tree clearing will occur in delineated PFO wetlands.

It is anticipated that the Project will require a Clean Water Act (CWA) Section 404/401 Permit authorization via the United States Army Corps of Engineers (USACE) under a Nationwide Permit 57 and a Section 401 CWA Isolated Wetland Permit approval with the Ohio Environmental Protection Agency (OEPA). Therefore, the Company intends to obtain approvals from both the USACE and OEPA prior to the commencement of construction activities for the Project.

The FEMA Flood Insurance Rate Map (FIRM) was reviewed to identify any floodplains/flood hazard areas that have been mapped within the Project Area (specifically, map number 39089C0120H, 39089C0140H, and 39089C0139H). Based on this mapping, FEMA-designated 100-year floodplains associated with Duncan Run and Kiber Run are crossed by the proposed alignment; however, no proposed structures are planned to be located within the floodplain areas. Local floodplain permitting, if deemed necessary for the Project, will be coordinated with agencies of jurisdiction as applicable prior to construction.

B(10)(e) Threatened, Endangered, and Rare Species

Provide a description of the applicant's investigation concerning the presence or absence of federal and state designated species (including endangered species, threatened species, rare species, species proposed for listing, species under review for listing, and species of special interest) that may be located within the potential disturbance area of the project, a statement of the findings of the investigation, and a copy of any document produced as a result of the investigation.

As part of the ecological study completed for the Project, a coordination letter was submitted to the United States Fish and Wildlife Service (USFWS) Ohio Ecological Services Field Office seeking technical assistance on the Project for potential impacts to threatened or endangered species. The September 11, 2023, response letter from the USFWS (see Appendix E) indicated that the federally endangered Indiana bat (*Myotis sodalis*) and northern long-eared bat (*My*otis *septentrionalis*) occur throughout the state of Ohio. The USFWS indicated that seasonal tree clearing would be required if suitable bat habitat trees were identified. Any tree clearing required for the Project will adhere to seasonal restrictions (March 31 through October 1); therefore, adverse impacts to protected bat species are not anticipated as a result of the Project. Due to the Project type, size, and location, USFWS does not anticipate adverse effects to any other federally endangered, threatened, proposed, or candidate species.

A coordination letter was submitted to the Ohio Department of Natural Resources (ODNR) Division of Wildlife (DOW) Ohio Natural Heritage Program (ONHP) and the ODNR - Office of Real Estate seeking an environmental review of the proposed Project for potential impacts on state listed and federally listed

threatened or endangered species. Correspondence from ODNR DOW/OHNP and the ODNR – Office of Real Estate was received on October 13, 2023 (See Appendix E).

According to the DOW, the Project is within the range of the state and federally endangered Indiana bat, the state and federally endangered northern long-eared bat, the state endangered little brown bat (*Myotis lucifugus*), and the state endangered tricolored bat (*Perimyotis subflavus*). Additionally, the DOW indicated that the southern portion of the Project is within the vicinity of records for the northern long-eared bat. Because of the presence of state endangered bat species established in the area, summer tree cutting is not recommended, and additional summer surveys would not constitute presence/absence in the area.

Similar to the USFWS response, ODNR recommends cutting between October 1 and March 31 to avoid impacts to theses protected bat species. Based on a desktop survey for caves, mines, and other potential openings, no winter hibernacula were identified within 0.25 mile of the Project (See Appendix F). Approximately 25 acres of tree clearing are anticipated for the Project, which will occur within the seasonal restrictions. Therefore, no additional coordination with ODNR regarding bat species is required.

The ODNR-DOW indicated that the Project is within the range of five mussel species: the federally endangered rayed bean (*Villosa fabalis*), the federally endangered snuffbox (*Epioblasma triquetra*), the federally threatened rabbitsfoot (*Quadrula cylindrica cylindrica*), the state threatened salamander mussel (*Simpsonaias ambigua*), and the state threatened pondhorn (*Uniomerus tetralasmus*). No in-water work within a perennial stream is proposed for the Project; therefore, these species are not anticipated to be impacted by the Project.

In addition, the ODNR lists the Project in the range of the northern harrier (*Circus hudsonius*). The ODNR recommends that nesting habitats for the listed species be avoided during their nesting periods. The professional survey completed for avian resources concluded no suitable habitat was observed for the northern harrier in the Project area; therefore, no impacts to this bird species are anticipated.

B(10)(f) Areas of Ecological Concern

Provide a description of the applicant's investigation concerning the presence or absence of areas of ecological concern (including national and state forests and parks, floodplains, wetlands, designated or proposed wilderness areas, national and state wild and scenic rivers, wildlife areas, wildlife refuges, wildlife management areas, and wildlife sanctuaries) that may be located within the potential disturbance area of the project, a statement of the findings of the investigation, and a copy of any document produced as a result of the investigation.

Within the proposed 150-foot ROW, the Company's consultant has identified four PEM wetlands, 10 PFO wetlands, two PEM/PFO wetland complexes, and one PSS/PFO wetland complex within the proposed ROW. Four preliminary structure locations are within a PFO delineated wetland.

Within the proposed 150-foot ROW, the Company's consultant has identified 13 streams (two ephemeral streams, five intermittent streams, and six perennial streams) and one pond. No preliminary structure locations are within a delineated stream or pond. Approximately 25 acres of ROW tree clearing is anticipated for the Project, of which, 8.2 acres occurs in delineated PFO wetlands.

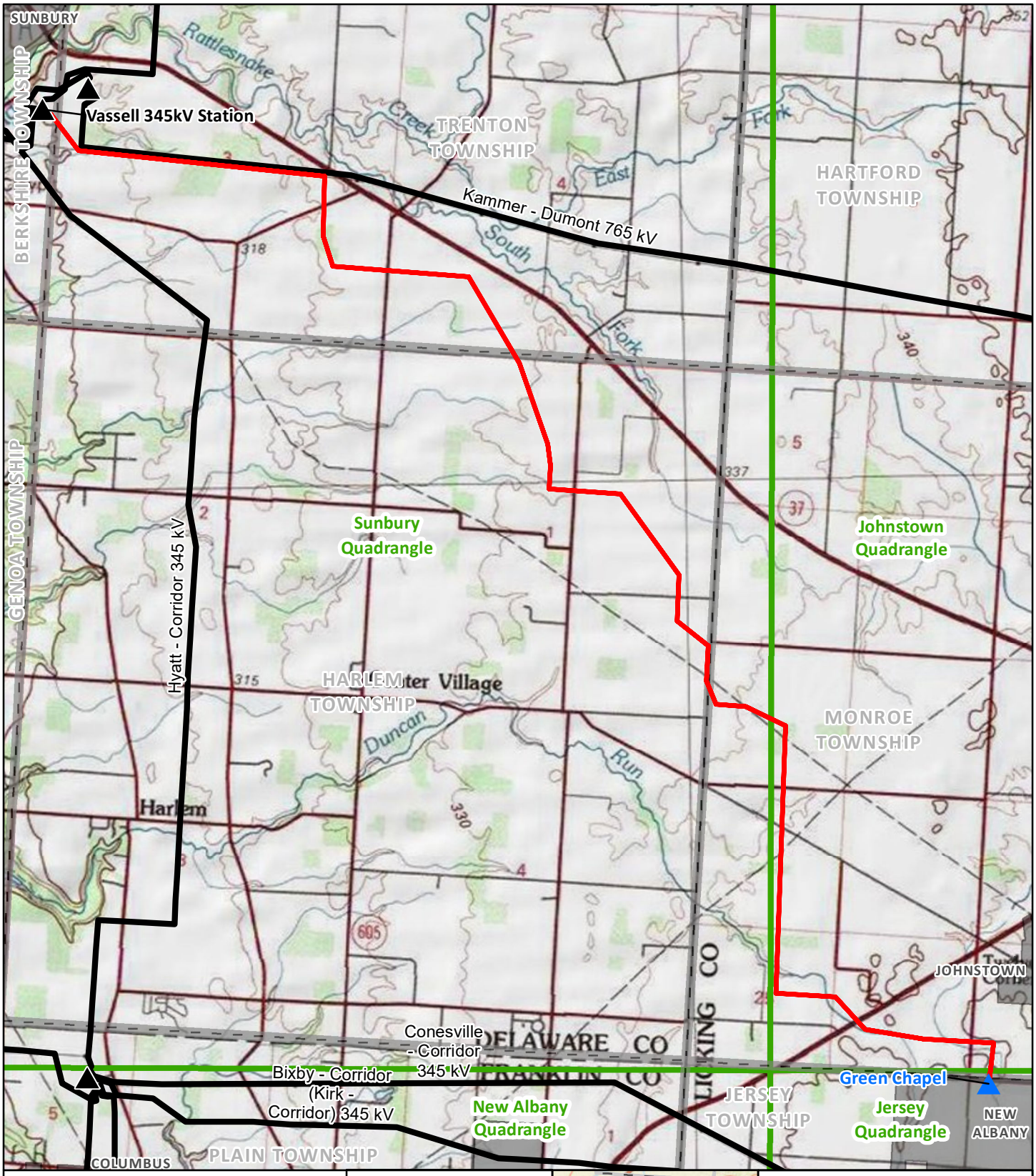
Based on a review of the Protected Areas Database of the United States as well as the Conservation Easement Database, there are no state or national parks, forests, or wildlife areas within the vicinity of the Project.

B(10)(g) Unusual Conditions

Provide any known additional information that will describe any unusual conditions resulting in significant environmental, social, health, or safety impacts.

To the best of the Company's knowledge, no unusual conditions exist that would result in significant environmental, social, health, or safety impacts.

Appendix A Project Maps



Proposed AEP Substation

Existing AEP Substation

Proposed Vassell - Green Chapel 345kV Transmission Line

Municipality

Township Boundary

USGS 7.5' Topographic Quad Boundary

Sources:
USGS (2021)

StatePlane
Ohio North
NAD 83

January 09, 2024



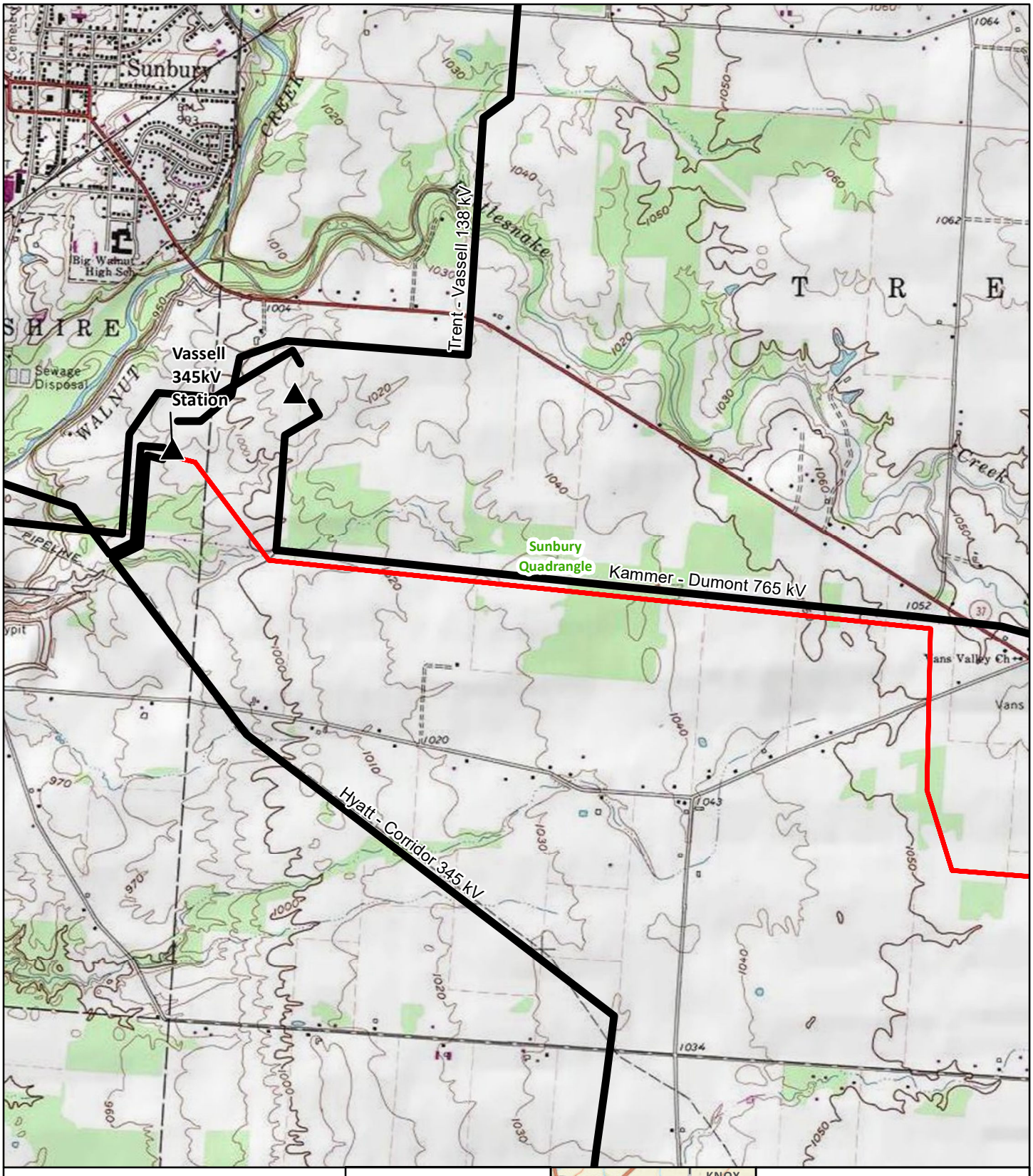
Map 1
Project Overview

AEP OHIO

Vassell - Green Chapel 345 kV Transmission Line Project

0 0.5 1 1.5

Miles



Existing AEP Substation

Proposed Vassell - Green Chapel 345kV Transmission Line

Existing AEP Transmission Line

USGS 7.5' Topographic Quad Boundary

Sources:
USGS (2021)

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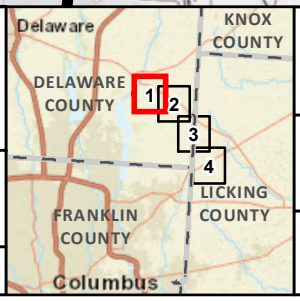
StatePlane
Ohio North
NAD 83

January 09, 2024



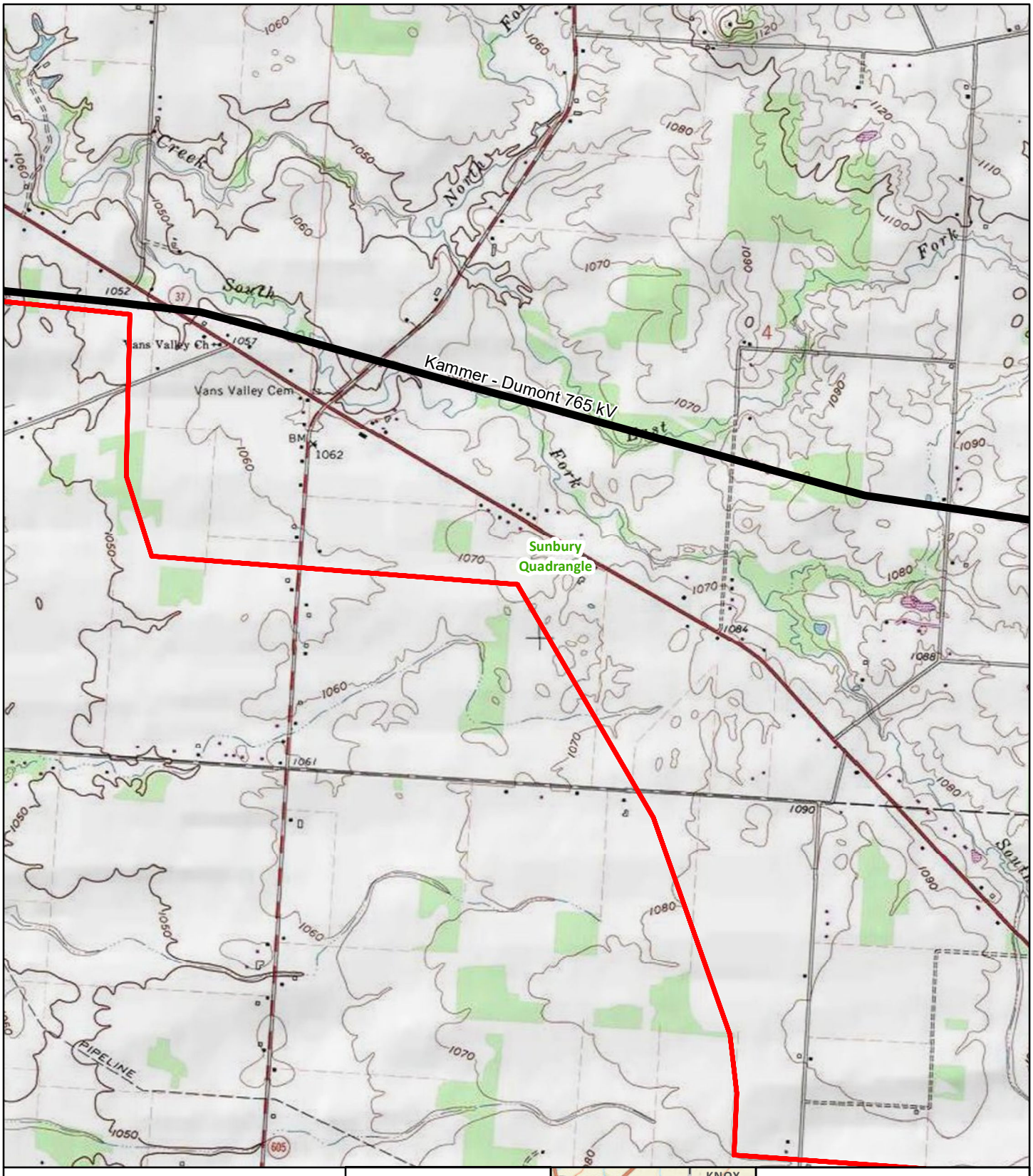
Map 2
Project Area

AEP OHIO

Vassell - Green Chapel 345 kV Transmission Line Project

0 1,000 2,000

Feet



Proposed Vassell - Green Chapel 345kV Transmission Line

Existing AEP Transmission Line

USGS 7.5' Topographic Quad Boundary

Sources:
USGS (2021)

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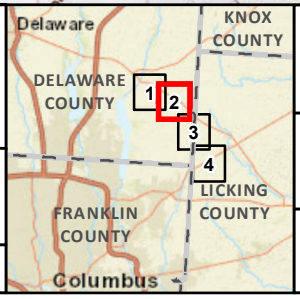
StatePlane
Ohio North
NAD 83

January 09, 2024



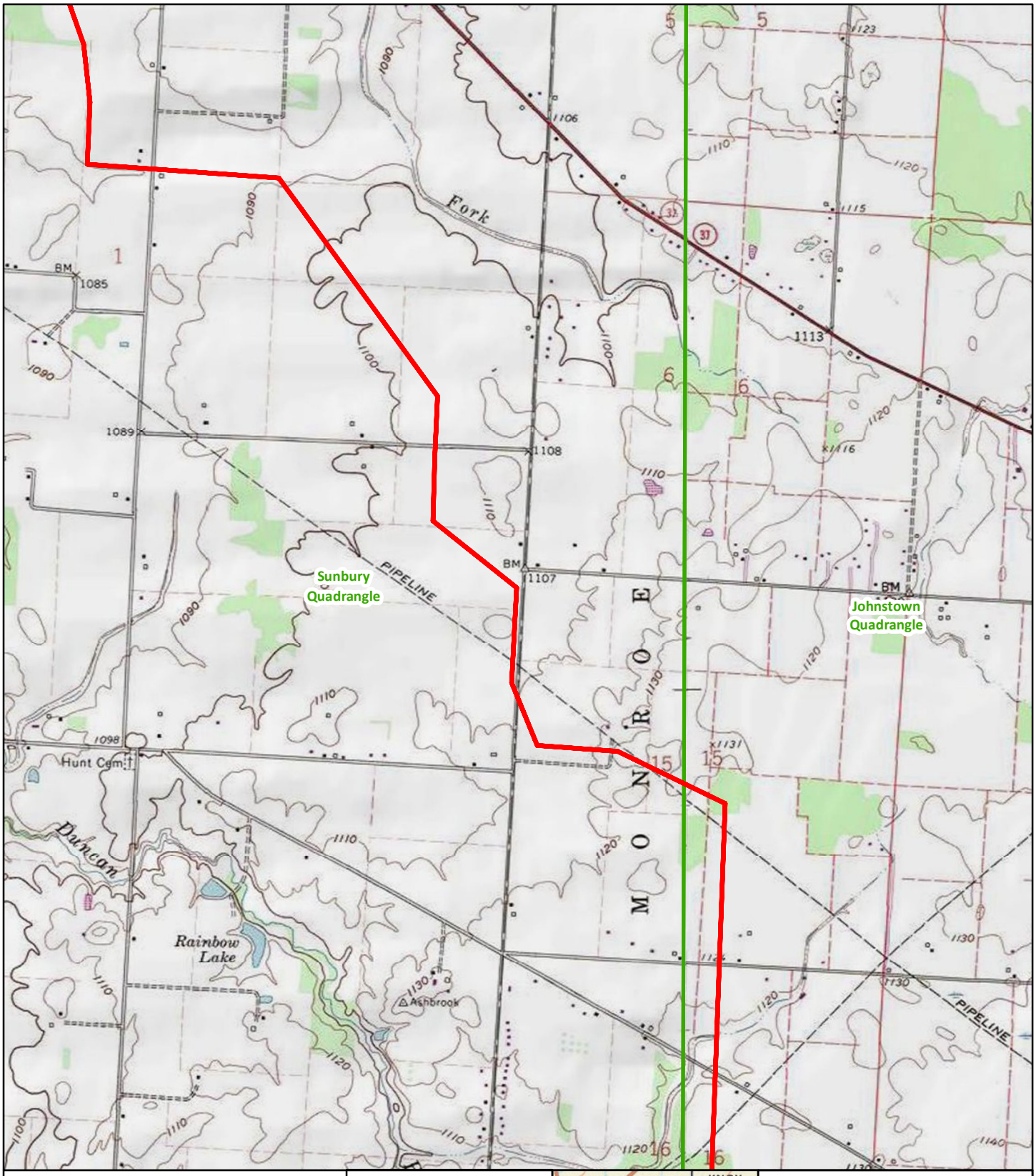
Map 2
Project Area

AEP OHIO

Vassell - Green Chapel 345 kV Transmission Line Project

0 1,000 2,000

Feet



Proposed Vassell - Green Chapel 345kV Transmission Line

USGS 7.5' Topographic Quad Boundary

Sources:
USGS (2021)

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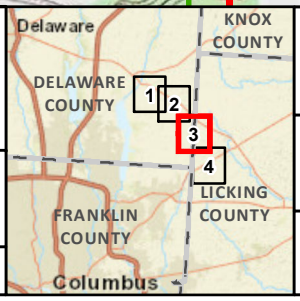
StatePlane
Ohio North
NAD 83

January 09, 2024



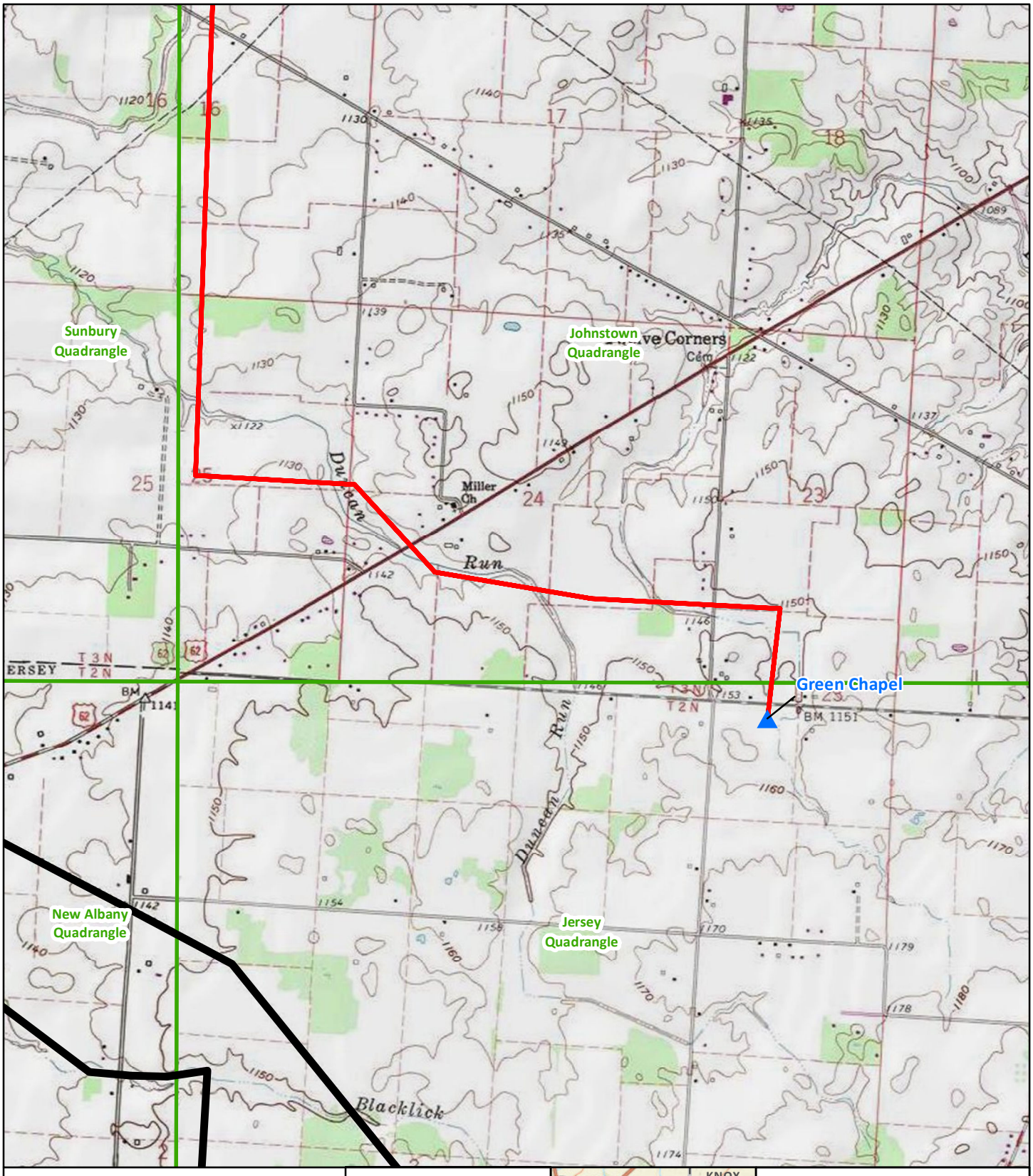
Map 2
Project Area

AEP OHIO

Vassell - Green Chapel 345 kV Transmission Line Project

0 1,000 2,000

Feet



Proposed AEP Substation

Proposed Vassell - Green Chapel 345kV Transmission Line

Existing AEP Transmission Line

USGS 7.5' Topographic Quad Boundary

Sources:
USGS (2021)

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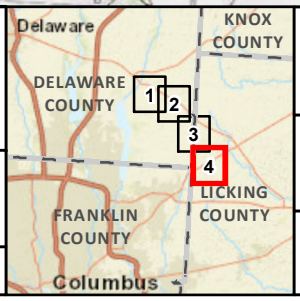
StatePlane
Ohio North
NAD 83

January 09, 2024



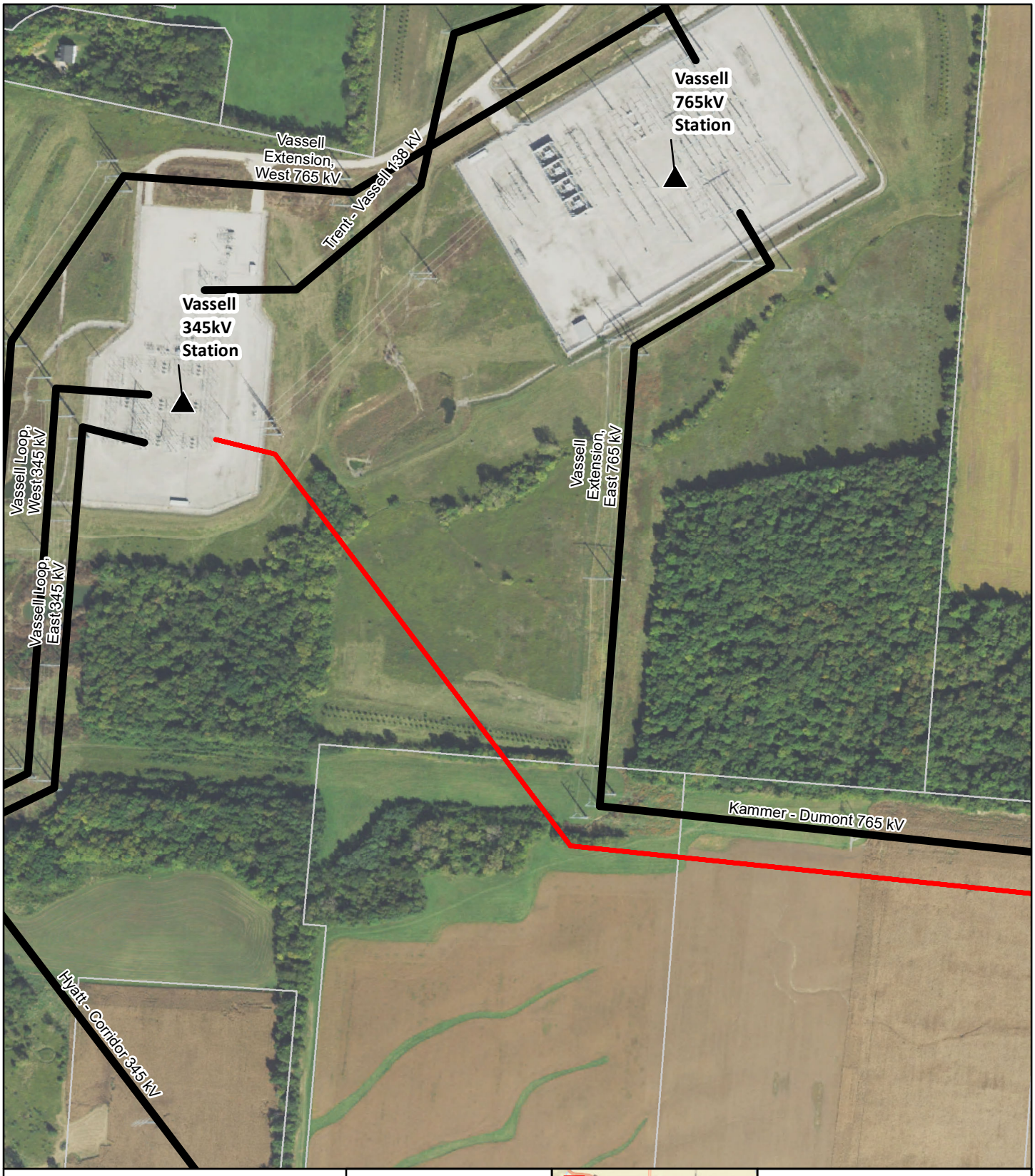
Map 2
Project Area

AEP OHIO

Vassell - Green Chapel 345 kV Transmission Line Project

0 1,000 2,000

Feet



Existing AEP Substation

Proposed Vassell - Green Chapel 345kV Transmission Line

Existing AEP Transmission Line

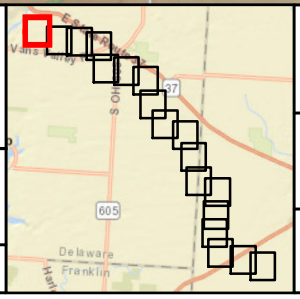
Parcel Boundary

Sources:
NAIP Imagery (USDA 2022)

Page 1 of 18

StatePlane
Ohio South
NAD 83

January 09, 2024



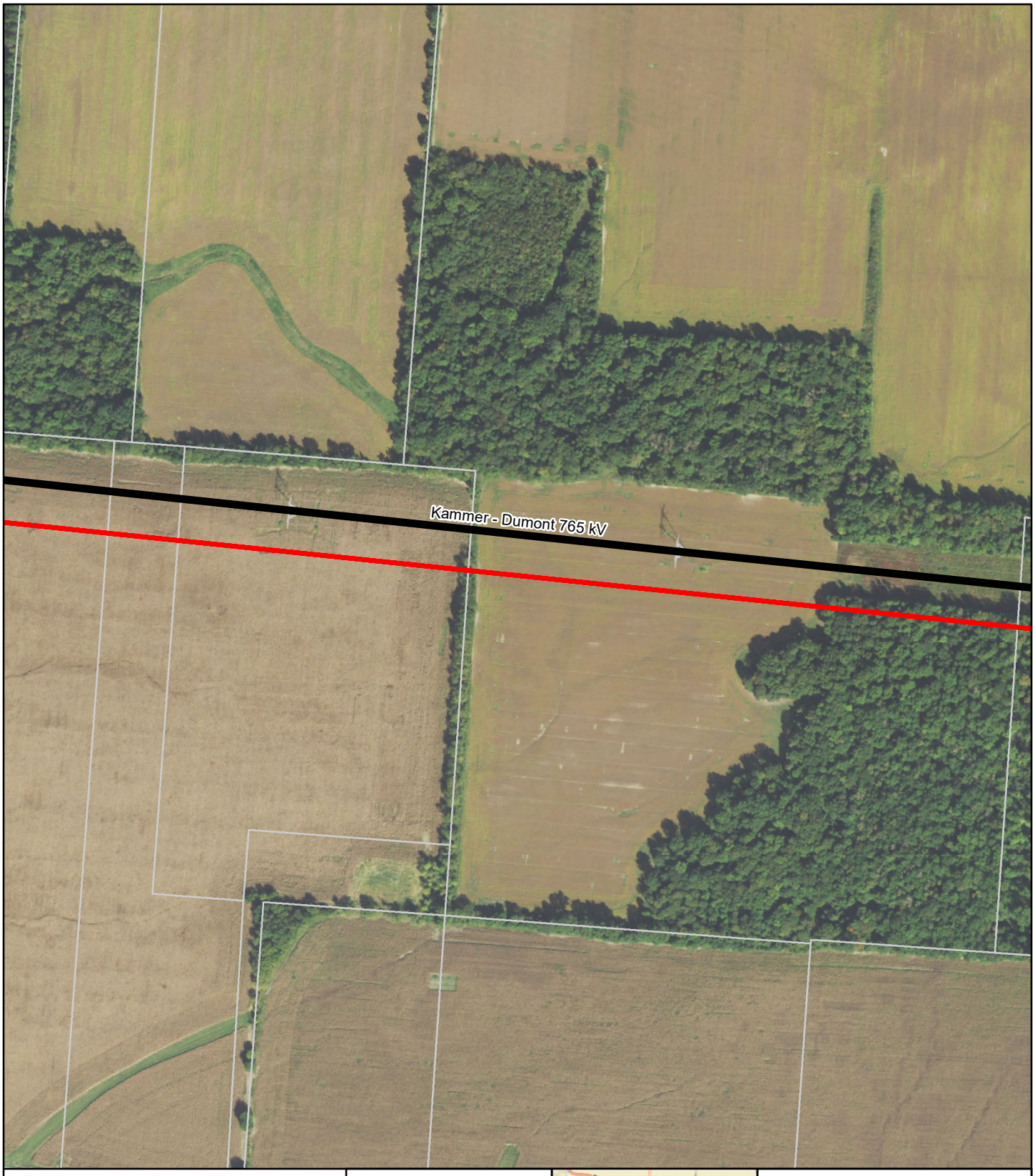
Map 3
Aerial Map

AEP OHIO
An AEP Company

Vassell - Green Chapel 345 kV Transmission Line Project

0 250 500 750

Feet



Proposed Vassell - Green Chapel 345kV Transmission Line

Existing AEP Transmission Line

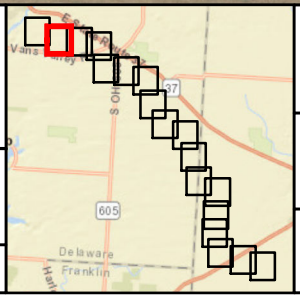
Parcel Boundary

Sources:
NAIP Imagery (USDA 2022)

Page 2 of 18

StatePlane
Ohio South
NAD 83

January 09, 2024



Map 3
Aerial Map

AEP OHIO
An AEP Company

Vassell - Green Chapel 345 kV Transmission Line Project

0 250 500 750

Feet



Proposed Vassell - Green Chapel 345kV Transmission Line

Existing AEP Transmission Line

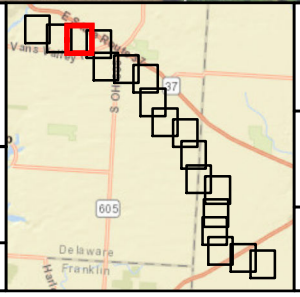
Parcel Boundary

Sources:
NAIP Imagery (USDA 2022)

Page 3 of 18

StatePlane
Ohio South
NAD 83

January 09, 2024



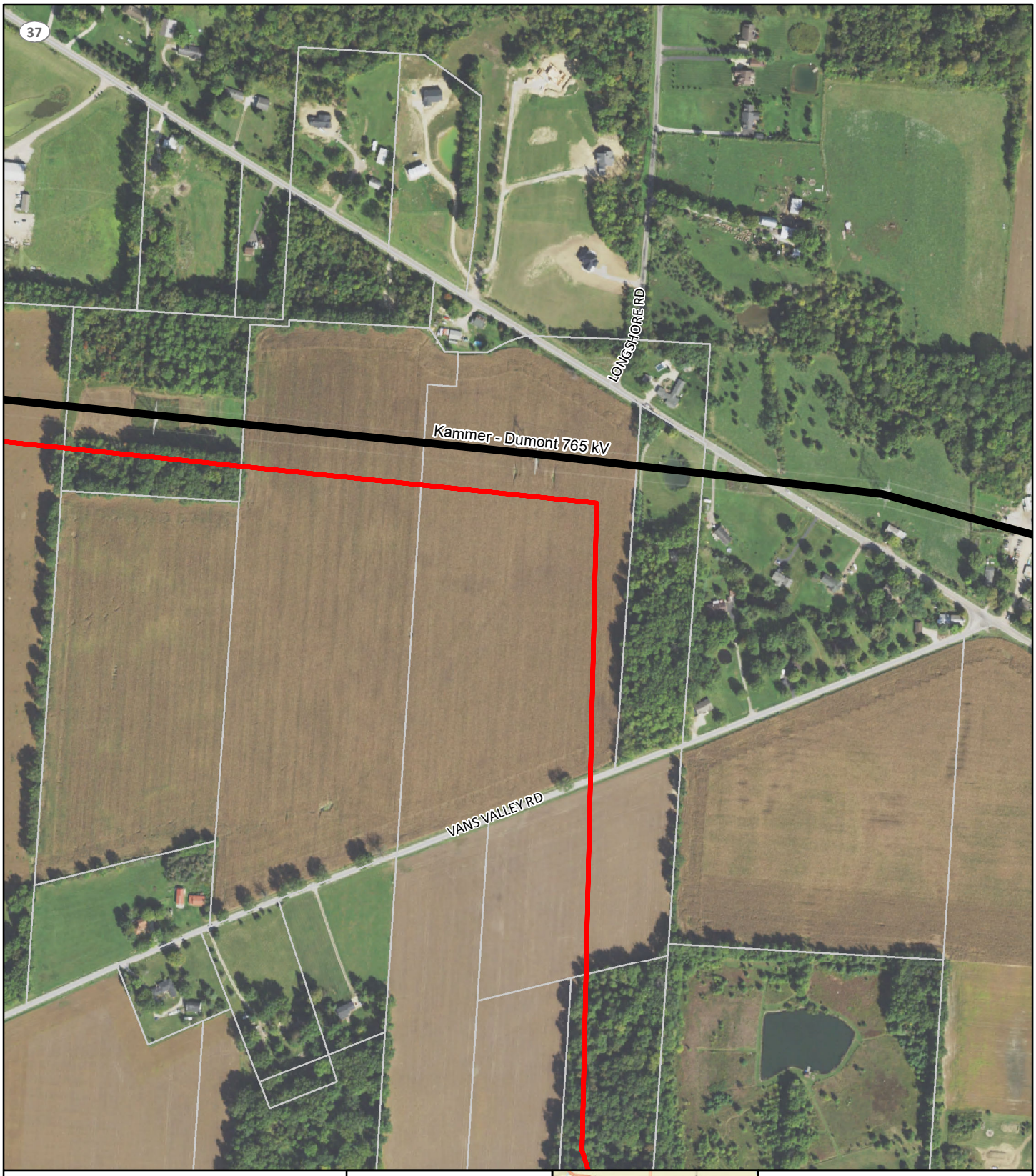
Map 3
Aerial Map

AEP OHIO
An AEP Company

Vassell - Green Chapel 345 kV Transmission Line Project

0 250 500 750

Feet



Proposed Vassell - Green Chapel 345kV Transmission Line

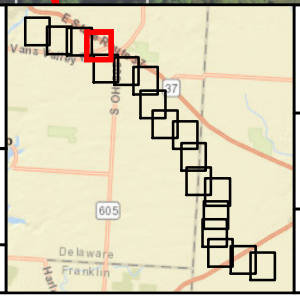
Existing AEP Transmission Line

Parcel Boundary

Sources:
NAIP Imagery (USDA 2022)

StatePlane
Ohio South
NAD 83

January 09, 2024



Map 3
Aerial Map

AEP OHIO
An AEP Company

Vassell - Green Chapel 345 kV Transmission Line Project

0 250 500 750
Feet



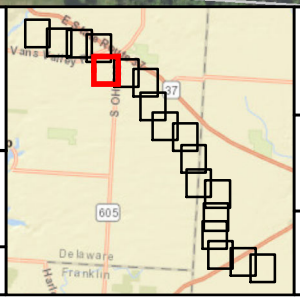
Proposed Vassell - Green Chapel 345kV Transmission Line

Parcel Boundary

Sources:
NAIP Imagery (USDA 2022)

StatePlane
Ohio South
NAD 83

January 09, 2024



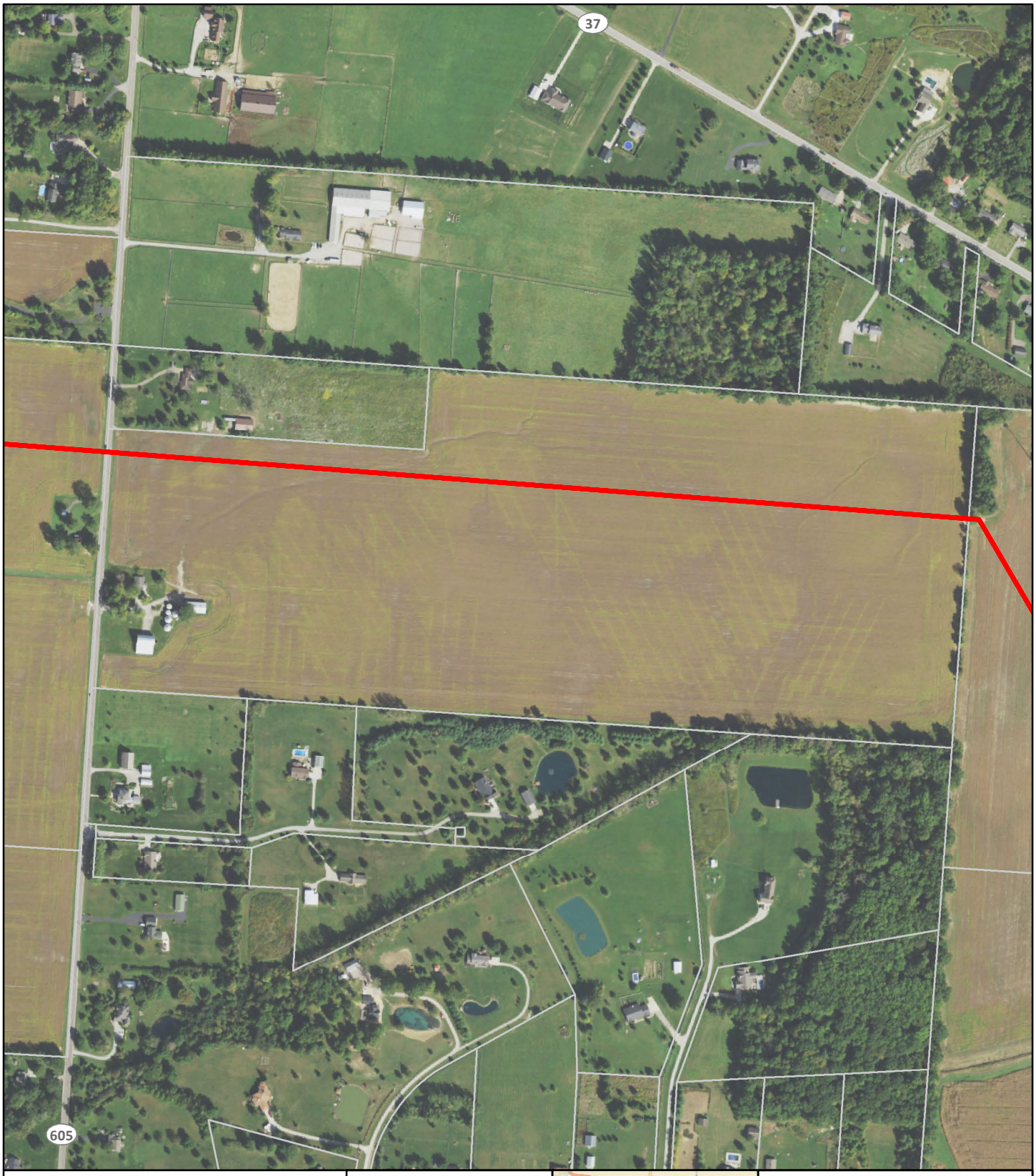
Map 3
Aerial Map

AEP OHIO
An AEP Company

Vassell - Green Chapel 345 kV Transmission Line Project

0 250 500 750

Feet



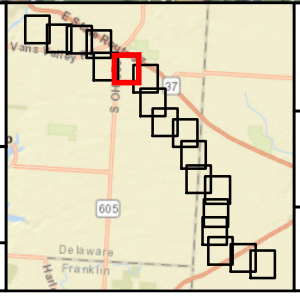
Proposed Vassell - Green Chapel 345kV Transmission Line

Parcel Boundary

Sources:
NAIP Imagery (USDA 2022)

StatePlane
Ohio South
NAD 83

January 09, 2024



Map 3
Aerial Map

AEP OHIO
An AEP Company

Vassell - Green Chapel 345 kV Transmission Line Project

0 250 500 750

Feet



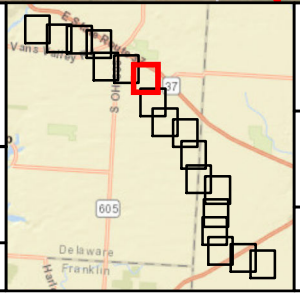
Proposed Vassell - Green Chapel 345kV Transmission Line

Parcel Boundary

Sources:
NAIP Imagery (USDA 2022)

StatePlane
Ohio South
NAD 83

January 09, 2024



Map 3
Aerial Map

AEP OHIO
An AEP Company

Vassell - Green Chapel 345 kV Transmission Line Project

0 250 500 750

Feet



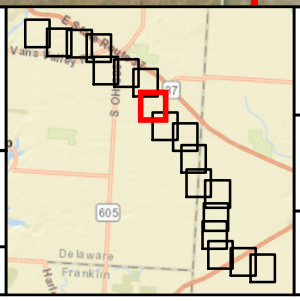
Proposed Vassell - Green Chapel 345kV Transmission Line

Parcel Boundary

Sources:
NAIP Imagery (USDA 2022)

StatePlane
Ohio South
NAD 83

January 09, 2024



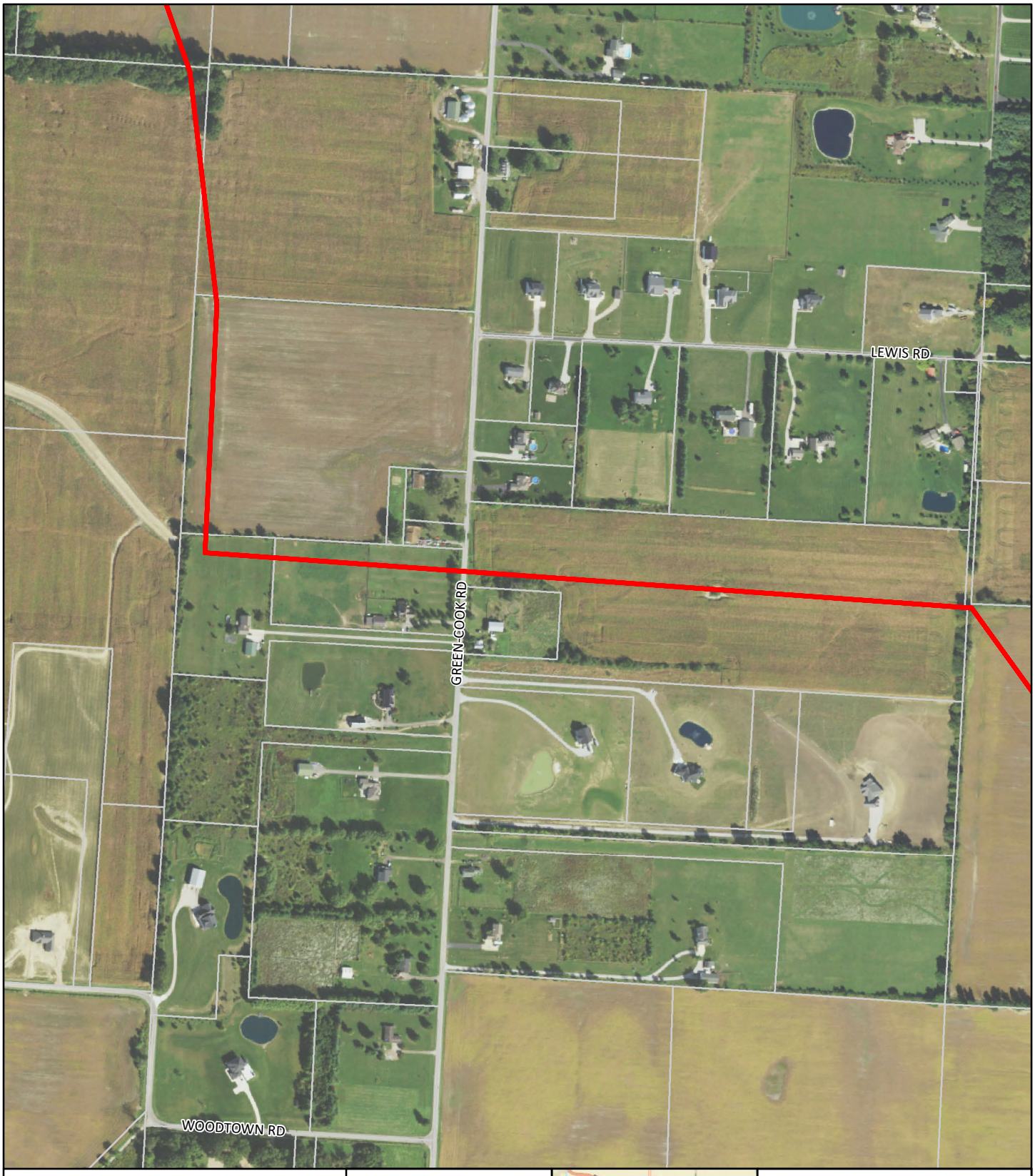
Map 3
Aerial Map

AEP OHIO
An AEP Company

Vassell - Green Chapel 345 kV Transmission Line Project

0 250 500 750

Feet



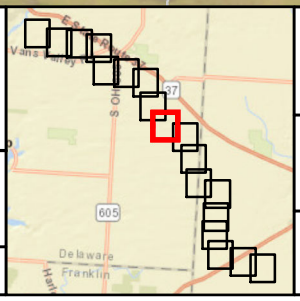
Proposed Vassell - Green Chapel 345kV Transmission Line

Parcel Boundary

Sources:
NAIP Imagery (USDA 2022)

StatePlane
Ohio South
NAD 83

January 09, 2024



Map 3
Aerial Map

AEP OHIO
An AEP Company

Vassell - Green Chapel 345 kV Transmission Line Project

0 250 500 750

Feet



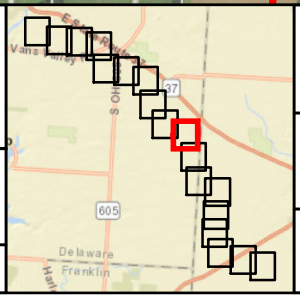
Proposed Vassell - Green Chapel 345kV Transmission Line

Parcel Boundary

Sources:
NAIP Imagery (USDA 2022)

StatePlane
Ohio South
NAD 83

January 09, 2024

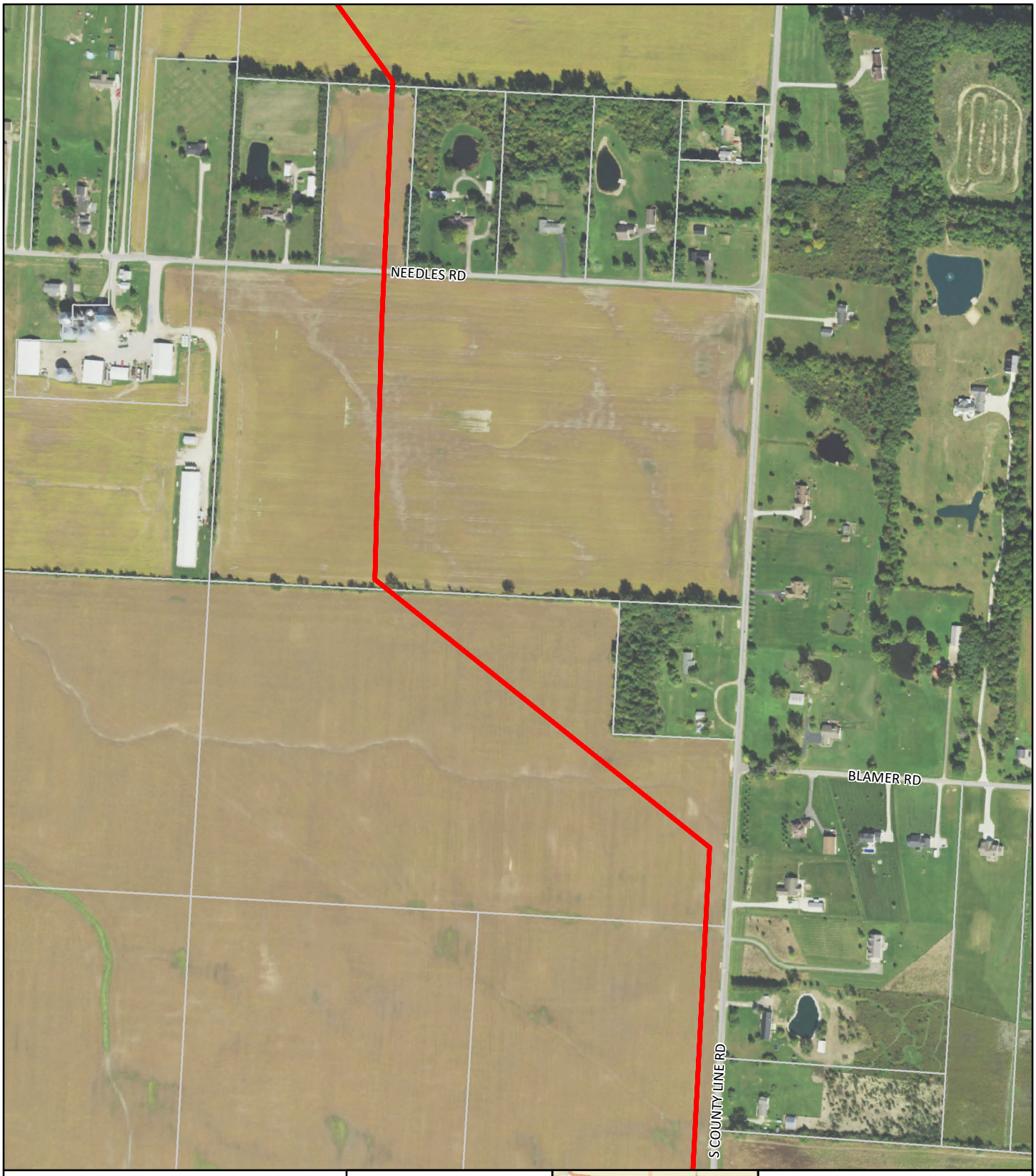


Map 3
Aerial Map

AEP OHIO
An AEP Company

Vassell - Green Chapel 345 kV Transmission Line Project

0 250 500 750
Feet



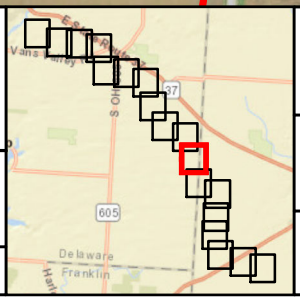
Proposed Vassell - Green Chapel 345kV Transmission Line

Parcel Boundary

Sources:
NAIP Imagery (USDA 2022)

StatePlane
Ohio South
NAD 83

January 09, 2024



Map 3
Aerial Map

AEP OHIO
An AEP Company

Vassell - Green Chapel 345 kV Transmission Line Project

0 250 500 750

Feet



Proposed Vassell - Green Chapel 345kV Transmission Line

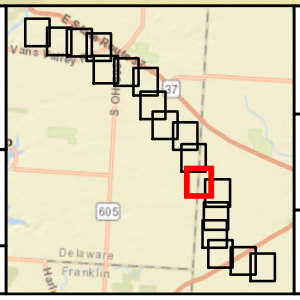
Agricultural District Parcel

Parcel Boundary

Sources:
NAIP Imagery (USDA 2022)

StatePlane
Ohio South
NAD 83

January 09, 2024



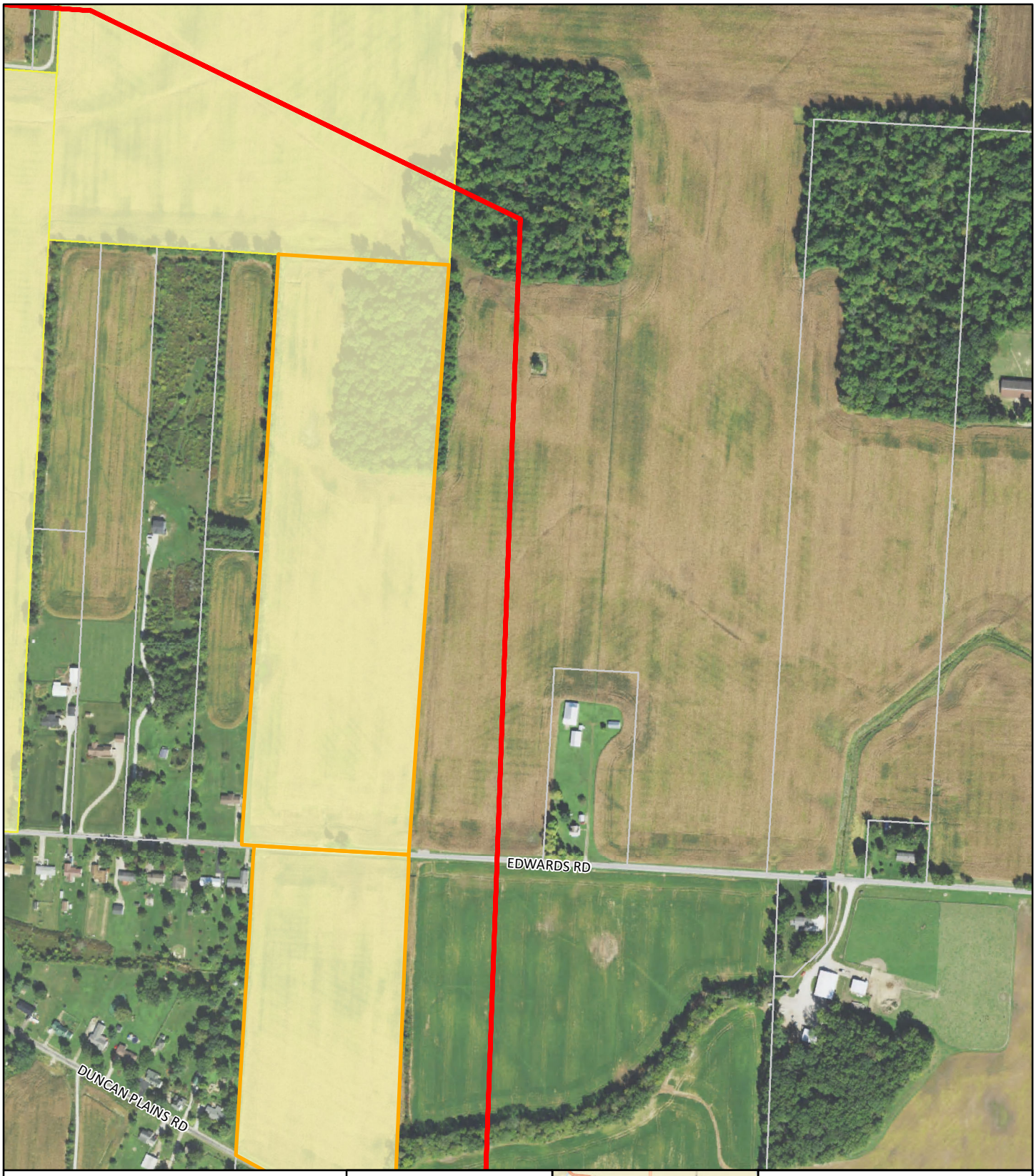
Map 3
Aerial Map

AEP OHIO
An AEP Company

Vassell - Green Chapel 345 kV Transmission Line Project

0 250 500 750

Feet

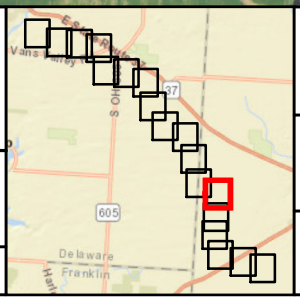


Proposed Vassell - Green Chapel 345kV Transmission Line
ODA Conservation Easement
Agricultural District Parcel
Parcel Boundary

Sources:
NAIP Imagery (USDA 2022)

StatePlane
Ohio South
NAD 83

January 09, 2024

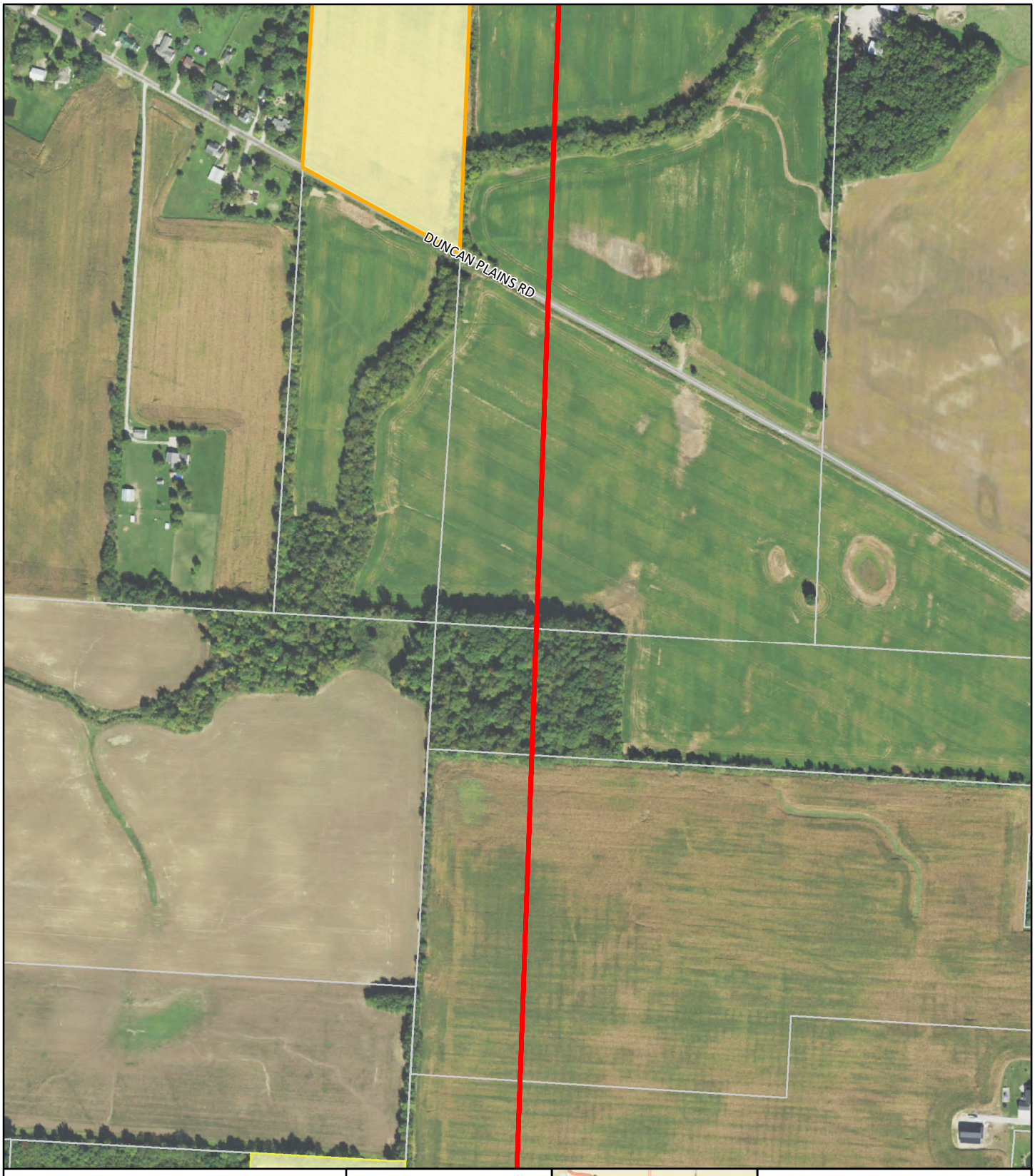


Map 3
Aerial Map

AEP OHIO
An AEP Company

Vassell - Green Chapel 345 kV Transmission Line Project

0 250 500 750
Feet



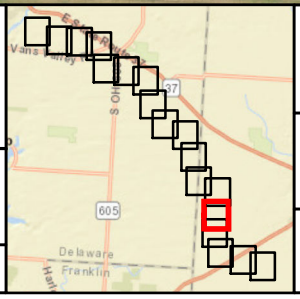
Proposed Vassell - Green Chapel 345kV Transmission Line
ODA Conservation Easement
Agricultural District Parcel
Parcel Boundary

Sources:
NAIP Imagery (USDA 2022)

Page 14 of 18

StatePlane
Ohio South
NAD 83

January 09, 2024

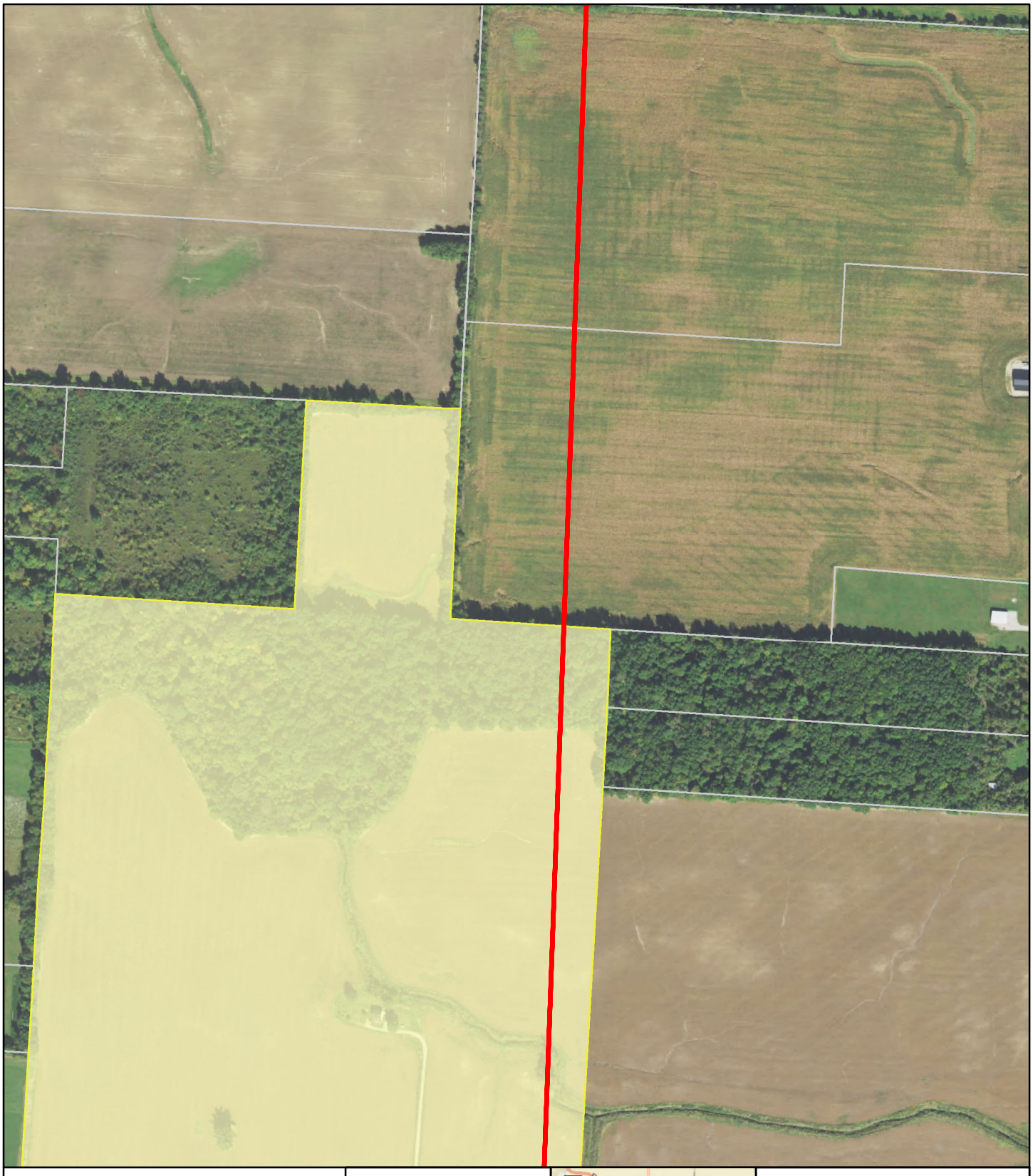


Map 3
Aerial Map

AEP OHIO
An AEP Company

Vassell - Green Chapel 345 kV Transmission Line Project

0 250 500 750
Feet



Proposed Vassell - Green Chapel 345kV Transmission Line

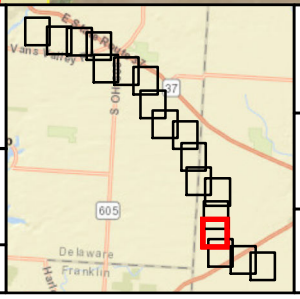
Agricultural District Parcel

Parcel Boundary

Sources:
NAIP Imagery (USDA 2022)

StatePlane
Ohio South
NAD 83

January 09, 2024



Map 3
Aerial Map

AEP OHIO
An AEP Company

Vassell - Green Chapel 345 kV Transmission Line Project

0 250 500 750

Feet



Proposed Vassell - Green Chapel 345kV Transmission Line

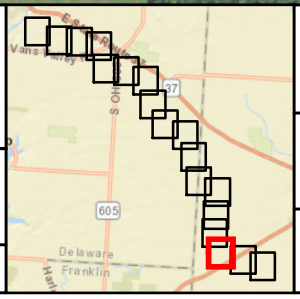
Agricultural District Parcel

Parcel Boundary

Sources:
NAIP Imagery (USDA 2022)

StatePlane
Ohio South
NAD 83

January 09, 2024



Map 3
Aerial Map

AEP OHIO
An AEP Company

Vassell - Green Chapel 345 kV Transmission Line Project

0 250 500 750

Feet



Proposed Vassell - Green Chapel 345kV Transmission Line

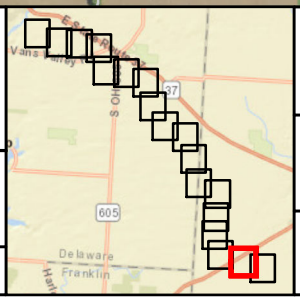
Agricultural District Parcel

Parcel Boundary

Sources:
NAIP Imagery (USDA 2022)

StatePlane
Ohio South
NAD 83

January 09, 2024



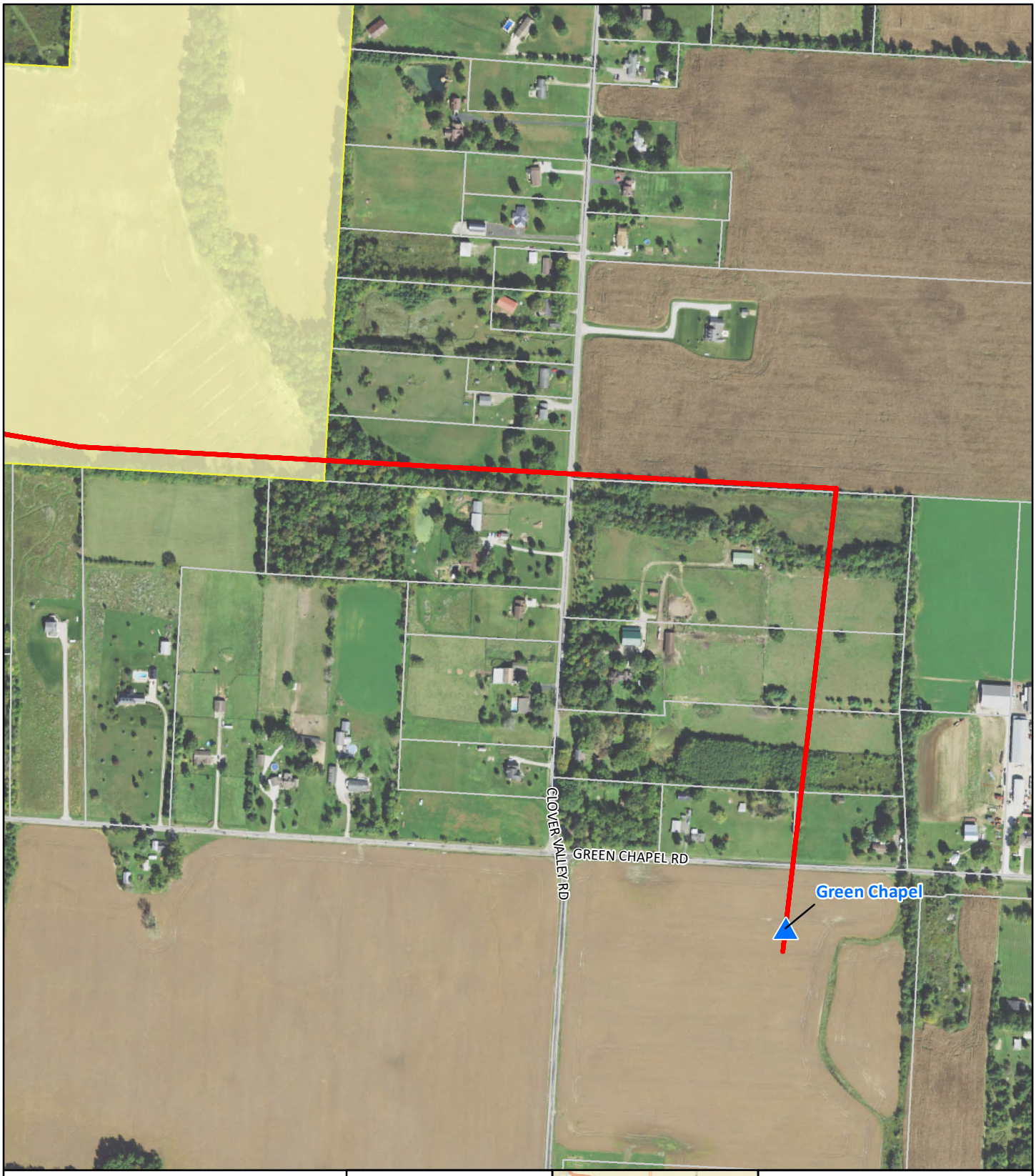
Map 3
Aerial Map

AEP OHIO
An AEP Company

Vassell - Green Chapel 345 kV Transmission Line Project

0 250 500 750

Feet



Proposed AEP Substation

Proposed Vassell - Green Chapel 345kV Transmission Line

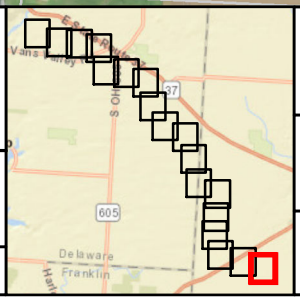
Agricultural District Parcel

Parcel Boundary

Sources:
NAIP Imagery (USDA 2022)

StatePlane
Ohio South
NAD 83

January 09, 2024



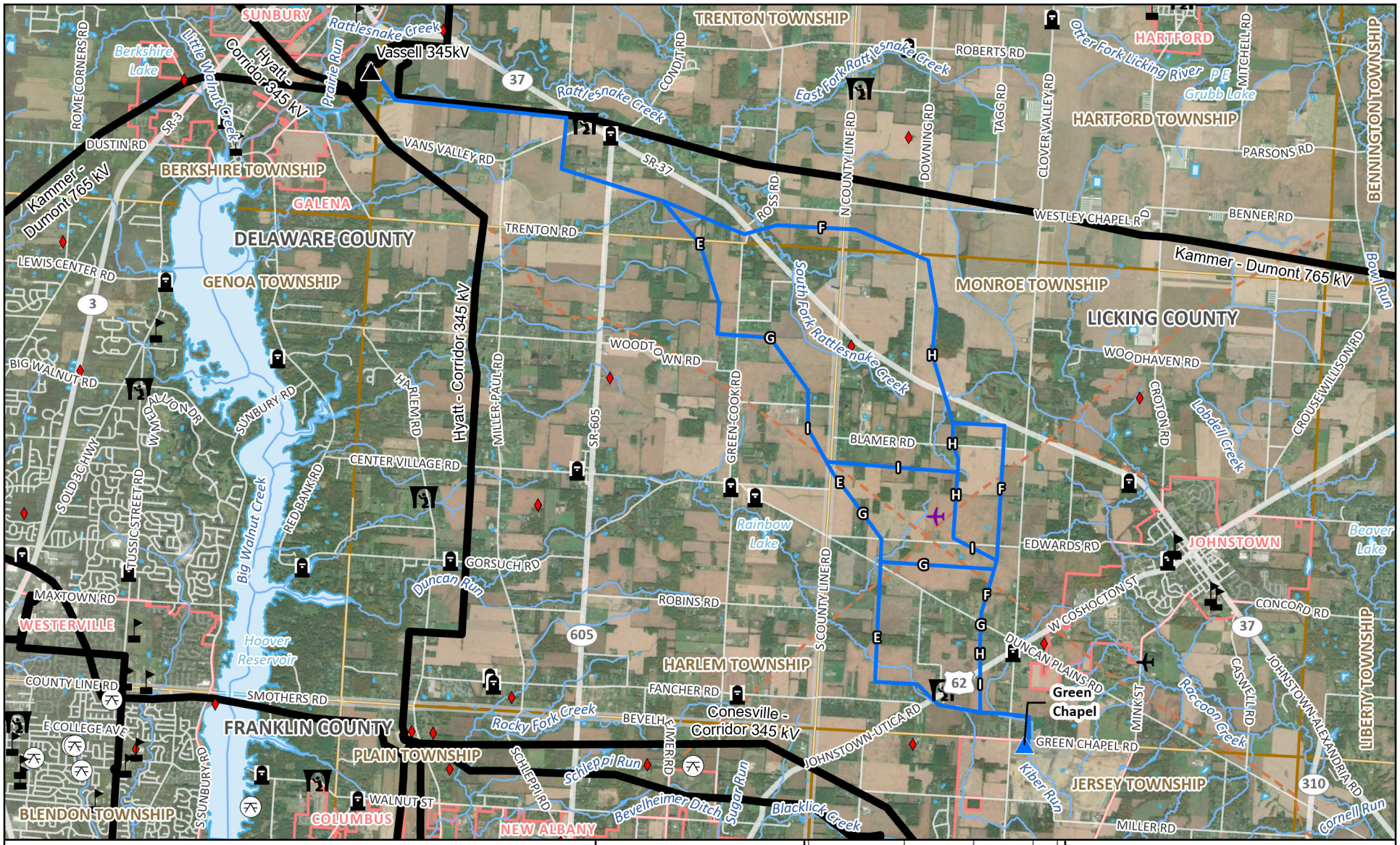
Map 3
Aerial Map

AEP OHIO
An AEP Company

Vassell - Green Chapel 345 kV Transmission Line Project

0 250 500 750

Feet

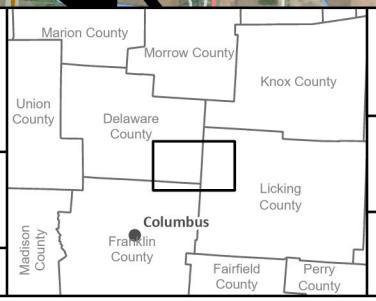


- Proposed Substation
- Existing Substation
- FAA Private Airstrip
- Airport
- Cemetery
- Place of Worship
- Hospital
- Park
- School
- FCC Communications Tower
- Vassell - Green Chapel Alternative Route
- Existing Transmission Line
- Existing Pipeline
- NHD Stream or River
- NHD Waterbody
- Municipal Boundary
- Township Boundary
- County Boundary

Data Sources:
FCC 2021,
ESRI 2013 & 2021,
NAIP 2021, ODOT 2021,
USGS 2013 & 2021.

State Plane
Ohio North
NAD 83

January 09, 2024



Map 4
Alternative Routes

AEP OHIO TRANSMISSION COMPANY
An AEP Company
BOUNDLESS ENERGY

Vassell - Green Chapel 345 kV Transmission Line Project

0 0.75 1.5 2.25 3
Miles

Appendix B PJM Solution

New Albany Area

- AEP is experiencing significant load growth in the New Albany area.
- As a result of the land development in this region, new easements and rights-of-way are becoming increasingly difficult and costly to obtain.
- In anticipation of this continual and future growth, AEP is planning to acquire ROW options/easements for two corridors in this area to facilitate any required future infrastructure development.



AEP Transmission Zone M-3 Process
Central/NW OH, Indiana.

Process Stage: Solutions Meeting 5/9/2023, 12/5/2023

Reason for review:

In March 2023, AEP informed stakeholders of its intent to acquire ROW for two 345 kV transmission lines to New Albany in recognition of the interest AEP has received in the area. AEP is now coming back to recommend the supplemental build of these lines to address the amount of load that has signed an LOA. PJM has confirmed in its DNH analysis that these lines do not cause other issues and address the build out of the loads in the area.

AEP Transmission Zone M-3 Process
Central/NW OH, Indiana.

Need Number: AEP-2022-OH023, AEP-2022-OH034, AEP-2022-OH036, AEP-2022-OH045, AEP-2022-OH046, AEP-2022-OH075, AEP-2022-OH077, AEP-2023-OH016, AEP-2023-OH019, AEP-2023-OH032, AEP-2023-OH040, AEP-2023-OH044, AEP-2023-OH052, AEP-2023-OH063

Process Stage: Solutions Meeting 5/9/2023, 12/5/2023

Proposed Solution (continued):

The following components are system reinforcements that were initially identified by AEP and later confirmed by PJM through their DNH analysis:

- **Vassell – Green Chapel 345 kV line:** Install approximately 12.5-mile long 345 kV transmission between Vassell and Green Chapel stations to mitigate overloading on multiple transmission facilities including other 345 kV transmission lines and 345-138 kV transformers. Cost: **$75.0 M**
- **Vassell – Curleys 345 kV line:** Install approximately 12.5-mile long 345 kV transmission between Vassell and Curleys stations to mitigate overloading on multiple transmission facilities including other 345 kV transmission lines and 345-138 kV transformers. Cost: **$75.0 M**
- **Vassell 765 & 345 kV stations: A**dd 3-345 kV breakers to connect new lines to Curleys and Green Chapel. Cost: **$10 M**
- **Green Chapel 345/138 kV station:** Install two 675 MVA, 345/138 kV transformers to connect the new Vassell – Green Chapel 345 kV line to 138 kV system and to mitigate overloading on the other 345/138 kV transformers in the system. Cost: **$39.2 M**

System Upgrades: $199.2 M

Case No. 24-0014-EL-BLN

Part 2 of 9

Appendix C Property Agreements and Form Easement

Property Parcel Number	Agreement Type	Easement or Option Obtained (Yes/No)
052-172590-00.000	New Easement	No
052-172614-00.000	New Easement	No
052-172668-00.000	New Easement	No
052-172740-00.000	New Easement	Yes
052-172752-00.001	New Easement	Yes
052-172890-00.000	New Easement	Yes
052-172890-00.001	New Easement	Yes
052-173094-01.000	New Easement	No
052-173094-03.000	New Easement	No
052-173616-00.000	New Easement	No
052-173658-00.000	New Easement	Yes
052-173664-00.000	New Easement	Yes
052-173706-00.000	New Easement	Yes
052-173844-00.000	New Easement	No
052-174000-00.000	New Easement	Yes
052-174156-00.000	New Easement	No
052-174156-00.009	New Easement	No
052-174834-00.000	New Easement	Yes
052-175698-00.000	New Easement	Yes
052-175806-00.000	New Easement	No
316-110-02-014-000	New Easement	Yes
316-110-02-015-002	New Easement	No
316-110-02-017-003	New Easement	No
316-110-02-017-007	New Easement	No
316-110-02-021-000	New Easement	No
316-110-02-022-000	New Easement	No
316-110-03-001-000	New Easement	No
316-110-03-003-000	New Easement	No
316-120-01-001-000	New Easement	No
316-120-01-002-000	New Easement	No
316-120-01-003-000	New Easement	No
316-120-01-003-001	New Easement	No
316-120-01-033-003	New Easement	No
316-140-01-001-000	New Easement	Yes
316-140-01-008-000	New Easement	No
316-140-01-010-001	New Easement	Yes
316-140-01-010-015	New Easement	Yes
316-140-01-049-000	New Easement	No
316-140-01-051-000	New Easement	No

Property Parcel Number	Agreement Type	Easement or Option Obtained (Yes/No)
316-140-01-054-000	New Easement	No
416-320-01-006-000	New Easement	Yes
416-330-01-001-000	New Easement	Yes
416-330-01-009-000	New Easement	Yes
416-330-01-011-000	New Easement	No
416-330-01-012-000	New Easement	Yes
416-330-01-013-000	New Easement	Yes
416-340-01-024-000	New Easement	No
416-340-01-025-000	New Easement	No
416-340-01-026-000	New Easement	No
416-340-01-029-000	New Easement	No
416-340-01-030-001	New Easement	No
416-340-01-039-000	New Easement	No
416-340-01-040-000	New Easement	Yes
416-340-01-043-000	New Easement	Yes
416-340-01-048-000	New Easement	No
416-340-01-067-000	New Easement	No
416-340-01-070-005	New Easement	No
416-430-01-030-000	New Easement	Yes
416-430-01-031-000	New Easement	Yes
416-430-01-062-000	New Easement	No
416-430-01-066-000	New Easement	Yes
416-430-01-067-000	New Easement	No
416-430-01-068-000	New Easement	No
416-430-01-069-001	New Easement	No

Line Name: Vassell - Green Chapel
Line No.: TLN380:OH422
Easement No.:

EASEMENT AND RIGHT OF WAY

On this _____ day of _____, 202__, for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, and the covenants hereinafter set forth, __[landowner name and marital status]__, whose address is _____ ("Grantor"), whether one or more persons, hereby grants, sells, conveys, and warrants to AEP Ohio Transmission Company, Inc., an Ohio corporation, a unit of American Electric Power, whose principal business address is 1 Riverside Plaza, Columbus, Ohio 43215 ("AEP"), and its successors and affiliates, a permanent easement and right of way ("Easement") for a single electric transmission line, not to exceed 345 kV, and for internal communication purposes related to the supply of electricity (the "Transmission Line"), being, in, on, over, under, through and across the following described lands of Grantor, situated in the State of Ohio, County of _____, and Township of _____ and being a part of ___[abbreviated legal description]____ ("Grantor's Property").

Contingent provision: [Spouse of Grantor, if any] join herein for the purpose of releasing all dower rights in regard to the Easement.

Grantor claims title by ___[name of vesting instrument]___ dated _____ from ___[name of first grantor]___, recorded on _____ at ___[record volume, page]___ in the _____ County Recorder's Office.

Auditor/Key/Tax Number: ____[Tax Parcel Number]____

The Easement Area is more fully described and depicted on Exhibit "A", a copy of which is attached hereto and made a part hereof ("Easement Area").

GRANTOR FURTHER GRANTS AEP THE FOLLOWING RIGHTS:

The right, now or in the future, to construct, reconstruct, operate, maintain, alter, improve, inspect, patrol, protect, repair, remove, replace, upgrade and relocate within the Easement Area, structures and appurtenant equipment necessary for the Transmission Line.

The right, in AEP's discretion, now or in the future, to cut down, trim or remove, and otherwise control, any and all trees, overhanging branches, vegetation or brush situated within the Easement Area and any temporary access roads or temporary workspaces identified on Exhibit "A" outside the Easement Area. Provided, however, that AEP shall not use herbicides or similar products for these purposes on any portions of the Grantor's Property maintained for residential or agricultural use. AEP shall also have the right to cut down, trim or remove trees situated on Grantor's Property which adjoin the Easement Area within the Tree Protection Zone when in the reasonable opinion of AEP those trees are dead, dying, diseased, leaning, or structurally defective and may endanger the safety of, or interfere with the construction, operation or maintenance of AEP's facilities or

ingress or egress to, from or along the Easement Area. The Tree Protection Zone extends eighty feet on all sides of the Easement Area depicted in Exhibit A.

AEP shall also have the right of reasonable ingress and egress over, across and upon the Easement Area only, unless additional access routes are depicted in the attached Exhibit A. Provided, however, that in the event access over, across and upon the Easement Area – and access routes, if any, shown in Exhibit A – shall become blocked or otherwise rendered unsafe or hazardous for use, AEP may temporarily access the Easement Area from other points across Grantor's Property, so long as that access is both reasonable and limited to the duration of the interference or safety hazard. AEP shall return the access area to its preexisting condition or pay damages to Grantor.

AEP shall also have the right to use temporary workspaces and temporary access roads outside the Easement Area, if any are shown on Exhibit A, in connection with its initial construction of the Transmission Line. AEP may shift the location of such temporary workspaces, if any, up to twenty (20) feet in any direction, and also shift the location of such temporary access roads, if any, up to twenty (20) feet in any direction, as field conditions or other requirements dictate. Upon completion of the overall Transmission Line project, but in no event later than two (2) years following the start of construction on Grantor's Property, AEP shall remove its equipment from all such temporary workspaces and temporary access roads outside the Easement Area, and AEP's temporary rights outside of the Easement Area shall automatically cease, terminate and revert to Grantor. AEP shall return any such areas to their preexisting condition or pay damages to Grantor as soon as practicable.

THIS GRANT IS SUBJECT TO THE FOLLOWING CONDITIONS:

Grantor reserves the right to cultivate annual crops, pasture, construct fences (provided gates are installed that adequately provide AEP the access rights conveyed herein) and roads or otherwise use Grantor's Property encumbered by this Easement in any way not inconsistent with the rights herein granted. In no event, however, shall Grantor, its heirs, successors, affiliates and assigns plant or cultivate any trees or place, construct, install, erect or permit any temporary or permanent building, structure, improvement or obstruction including but not limited to, storage tanks, billboards, signs, sheds, dumpsters, light poles, water impoundments, above ground irrigation systems, swimming pools or wells, or permit any alteration of the ground elevation, over, or within the Easement Area. AEP may, at Grantor's cost, remove any structure or obstruction if placed within the Easement Area, and may re-grade any alterations of the ground elevation within the Easement Area.

AEP agrees to repair or pay Grantor for actual damages sustained by Grantor to crops, fences, gates, irrigation and drainage systems, drives, or lawns that are permitted herein, when such damages arise out of AEP's exercise of the rights herein granted.

Pursuant to R.C. 163.02, Grantor possesses a right of repurchase pursuant to R.C. 163.211 if AEP decides not to use Grantor's Property for the purpose stated in the appropriation petition and Grantor provides timely notice of a desire to repurchase.

This instrument contains the complete agreement, expressed or implied between the parties herein

and shall inure to the benefit of and be binding on their respective successors, affiliates, heirs, executors, and administrators.

This Easement may be executed in counterparts, each of which shall be deemed an original, but all of which, taken together, shall constitute one and the same instrument.

Any remaining space on this page left intentionally blank. See next page(s) for signature(s).

IN WITNESS WHEREOF, said Grantor hereunto set their hand(s) and seal(s) as of the last date set forth below.

GRANTOR

SIGNATURE BLOCK FOR A BUSINESS ENTITY / TRUST:

[name of entity/trust & kind of business association identified]

By:_____
Print name:_____
Its Authorized Signer

State of Ohio §
§ SS:
County of _____ §

This instrument was acknowledged before me on this _____ day of _____, 202__ by _____, the _____[title]_____ of ___[name of entity/trust]___, a/an ___[state of incorporation and type of entity/trust]____, on behalf of ___[name of entity/trust]___.

_____
Notary

SIGNATURE BLOCK FOR AN INDIVIDUAL:

_____
____[Typed name of individual]____

State of Ohio §
§ SS:
County of _____ §

This instrument was acknowledged before me on this _____ day of _____, 202__ by ___[name of individual]____.

_____
Notary

This instrument prepared by Marland Turner, American Electric Power Service Corporation, 1 Riverside Plaza, Columbus, OH 43215 for and on behalf of AEP Ohio Transmission Company, Inc., a unit of American Electric Power.

When recorded return to: American Electric Power – Transmission Right of Way, 8600 Smith's Mill Road, New Albany, OH 43054.

Appendix D Siting Study

Siting Study

Vassell – Green Chapel Transmission Enhancements

Ohio Power Siting Board
Case No. 24-0014-EL-BLN

Prepared for:

AEP OHIO
An AEP Company

Submitted to:

American Electric Power

Prepared by:

WSP USA
312 Elm Street
Suite 2500
Cincinnati, OH 45202

WSP

January 2024

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Map 7a. Cultural Resources (Vassell – Green Chapel)

Map 8. Proposed Routes

Attachment B: GIS Data Sources

Attachment C: Agency Correspondence

Key Terminology

Alternative Routes	Assemblage of Study Segments that form routes for analysis and comparison.
Conceptual Routes	Initial routes for the Project that adhere to a series of general siting and technical guidelines.
Constraints	Specific areas that should be avoided to the extent reasonably practical during the route development and site selection process.
Opportunity Feature	Areas where the transmission line may have less disruption to area land uses and the natural and cultural environment.
Project Endpoint	The Project starting and ending point(s), which may include substations, switch stations, tap points, or other locations defined by the Company's planners and engineers.
Proposed Route	The alignment on which the applicant/Siting Team proposes to construct a transmission line. The Proposed Route (1) reasonably minimizes adverse impacts on area land uses and the natural and cultural environment; (2) minimizes special design requirements and unreasonable costs; and (3) can be constructed and operated in a timely, safe, and reliable manner.
Siting Team	A multidisciplinary team of experts in transmission line routing, impact assessment for a wide variety of natural resources and the human environment, impact mitigation, engineering, and construction management.
Study Area	The territory in which line route alternatives can be sited to feasibly meet the Project's functional requirements and, at the same time, minimize environmental impacts and Project costs.
Study Segments	Study Segments are partial alignments that when combined form a complete route.
Substation	Substations are facilities that transform electric power from high to low, or the reverse an enclosed assemblage of equipment, e.g., switches, circuit breakers, buses, and transformers, through which electric energy is passed for the purpose of switching or modifying its characteristics.
Transmission Line	An electric line that moves bulk electric power from a generating plant to a substation or between substations.

ACRONYMS

AEP	American Electric Power
EHV	Extra-high voltage
EPA	U.S. Environmental Protection Agency
ESRI	Environmental Systems Research Institute
FCC	Federal Communications Commission
DBH	Diameter at breast height
GIS	Geographic Information System
HV	High-voltage
kV	Kilovolt
msl	Mean sea level
NACo	New Albany Company
NAIP	National Agricultural Imagery Program
NERC	North American Electric Reliability Corporation
NCED	National Conservation Easement Database
NHD	National Hydrography Dataset
NLCD	National Land Cover Database
NPDES	National Pollutant Discharge Elimination System
NRCS	National Resources Conservation Service (of the USDA)
NRHP	National Register of Historic Places
NWI	National Wetlands Inventory
ODA	Ohio Department of Agriculture
ODNR	Ohio Department of Natural Resources
ROW	Right-of-way
SHPO	State Historic Preservation Office
SSURGO	Soil Survey Geographic Database
T&E	Threatened and endangered (species)
UNT	Unnamed tributary
USACE	United States Army Corps of Engineers
USDA	U.S. Department of Agriculture
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey

1.0 INTRODUCTION

1.1 Project Description

American Electric Power Ohio Transmission Company ("AEP Ohio Transco" or the "Company") is proposing the Vassell – Green Chapel Transmission Enhancements (the "Project") to improve the electric transmission network serving customers in Delaware, Franklin, and Licking counties, Ohio. The customer-driven Project supports economic development and regional electric reliability by proposing the following facilities:

- The proposed Curleys Station, located approximately 0.6 mile southwest of Green Chapel Road and US-62.
- The proposed Green Chapel Station, located southeast of Green Chapel Road and Clover Valley Road.
- Two (2) 345 kV transmission lines, each approximately 13 miles in length, both originating at the Company's existing Vassell Station and one line extending to the proposed Curleys Station and one line extending to the Company's proposed Green Chapel Station.

The New Albany, Ohio area continues to see some of the fastest growing demand in the AEP system. The robust economic development in the New Albany area is creating a continued influx of new customer interconnection requests. The Project will address the projected load growth and serve the demand of several large customer requests in the area.

WSP USA (WSP) was retained by the Company to conduct a comprehensive Siting Study to identify Proposed Routes for the two new 345-kV transmission lines; the Vassell – Curleys 345 kV Transmission Line and the Vassell – Green Chapel 345 kV Transmission Line. The Siting Team evaluated Study Segments and Alternative Routes based on established siting guidelines (see **Section 2.3**); an inventory of environmental, land use, and cultural factors in the study area; and local knowledge, including landowner feedback, stakeholder input and industry experience. Through this process Proposed Routes for the two transmission lines were identified.

The Project Area is illustrated below in **Figure 1**.

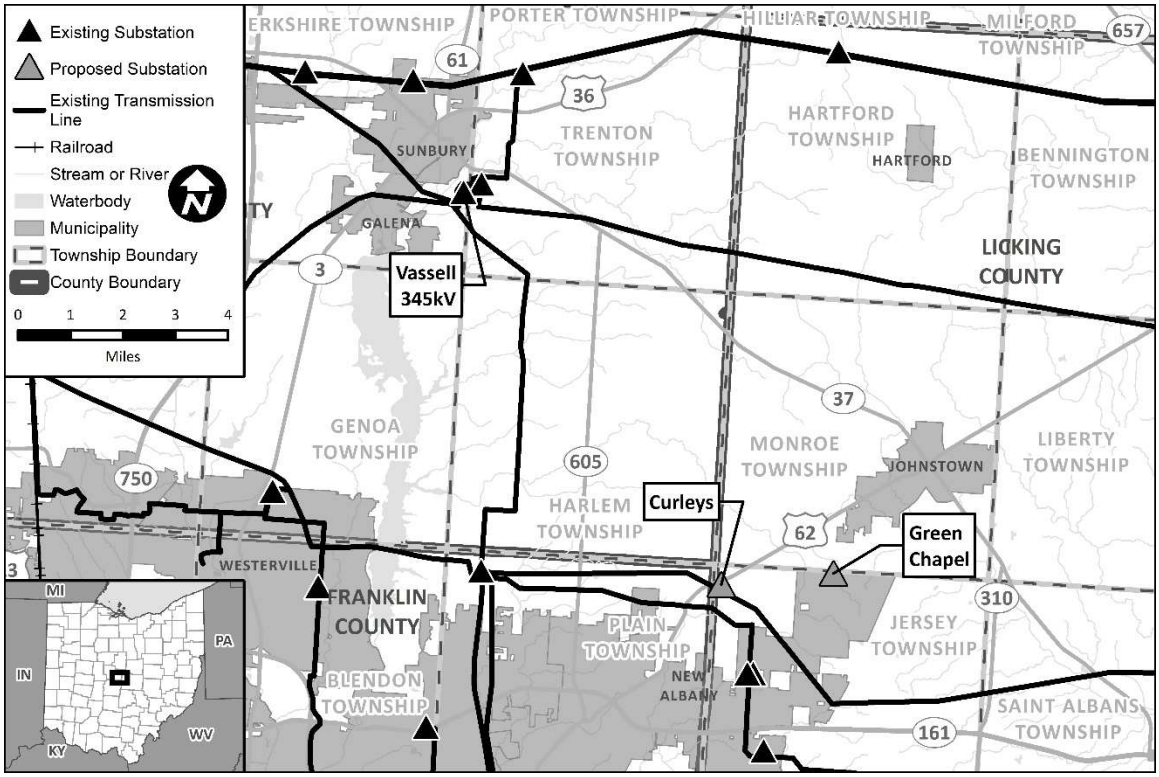


Figure 1. Project Location Map

The Company's existing Vassell Station is located southeast of Sunbury, Ohio, and northeast of Galena, Ohio. The proposed Curleys Station is located north of New Albany, Ohio, while the proposed Green Chapel Station is located northeast of New Albany, Ohio. The project area is located in Berkshire, Harlem, and Trenton townships in Delaware County; Jersey and Monroe townships in Licking County; and Plain Township in Franklin County within central Ohio. Dominant transportation features in the project area include US Highway 62 (US-62), which traverses southwest to northeast; State Route 605 (OH-605), which travels north to south; and State Route 37 (OH-37), which traverses southeast to northwest. No active or inactive railroad corridors were identified within the project area.

Agricultural land covers most of the project area, consisting predominantly of cultivated crops. Residential subdivisions are generally concentrated east of OH-605 along Duncan Road and Center Village Road, and along US-62 in Johnstown. Individual residential properties or agricultural farmsteads are scattered along local roadways throughout much of the project area. The region's future economic development is a primary factor for the Project.

No federal or public lands are located within the project area, as indicated by the United States Geological Survey (USGS) Protected Areas Database of the United States (PADUS). Three Ohio Department of Agriculture (ODA) agricultural easements were identified within the project area:

two are located adjacent to one another along Edwards Road and Duncan Plains Road and approximately 2.5 miles northeast of the proposed Curleys Station, and the third is located along Miller-Paul Road and approximately 3.5 miles south of the existing Vassell Station. Recreational areas identified within the project area solely consist of privately-owned golf courses (Clover Valley Golf Club, Royal American Links, and Rattlesnake Ridge Golf Club).

The primary electric infrastructure in the area consists of three Company-owned high-voltage (HV) corridors: the Kammer – Dumont 765 kV Transmission Line located at the northern side of the project area traversing east to west, the Hyatt – Corridor 345 kV Transmission Line located on the western side of the project area traversing north to south, and the Conesville – Corridor 345 kV Transmission Line located at the southern side of the project area traversing east to west. West of Johnstown, two interstate oil/gas transmission pipelines cross the project area from northwest to southeast and northeast to southwest.

Dominant hydrologic features include Duncan Run, Rocky Fork Creek, Big Walnut Creek, and Rattlesnake Creek, and Raccoon Creek, as well as their various unnamed upstream tributaries. All named and unnamed streams generally flow northwestward towards Hoover Reservoir, as indicated by the USGS National Hydrology Dataset (NHD). Since most of the project area consists of cultivated fields, wetlands identified in the U.S. Fish and Wildlife (USFWS) National Wetland Inventory (NWI) primarily occur along the riparian corridors of headwater and perennial streams in addition to fragmented woodlots. Several open NHD waterbodies, (such as Rainbow Lake), are scattered along the corridors of the various unnamed tributaries as well as Duncan Run and Rocky Fork Creek. Additionally, manmade irrigation ponds and retention basins were identified on agricultural, residential, and industrial properties in the project area.

Siting opportunities identified in the project area include compatible existing land uses, such as linear boundaries and large undeveloped/agricultural tracts. Siting challenges identified for the Project primarily include natural resources and proximity to existing residences and commercial/industrial buildings.

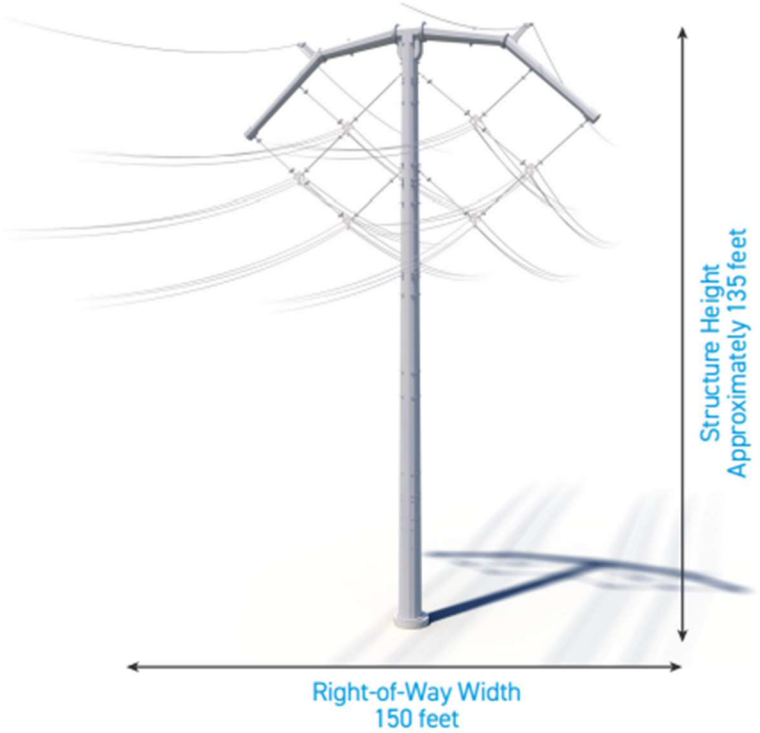
1.2 Proposed Transmission Facilities Description

The Company proposes to construct two new 345 kV transmission lines between the existing Vassell 345 kV Station and proposed Curleys and Green Chapel substations to upgrade the power grid, which will support more than 10 customers in the greater New Albany area. Customer demand for electricity is anticipated to grow about four times the current need over the next five years. Each new 345 kV transmission line will be built double circuit capable, but only one circuit will be strung and energized initially. The proposed design consists of the Company's Breakthrough in Overhead Line Design (BOLD) technology, which is capable of operating more

efficiently than conventional transmission pole designs. The BOLD structures are approximately 135 feet above ground and require a 150-foot-wide right-of-way (ROW), as shown below in **Figure 2**.

Construction of the proposed stations and 345 kV transmission lines will strengthen the local electric transmission system and provide service to customers in the area.

Figure 2. Typical Transmission Structure



1.3 Proposed Construction Activities

Prior to selecting proposed routes, field surveys were conducted along several feasible Alternative Route corridors identified for the Project to locate site-specific environmental features along the route in support of environmental permitting requirements. Once the final routes are identified, field activities such as access road delineations and geotechnical investigations will continue to allow construction planning efforts to begin. Construction activities include ROW clearing, erosion and sediment controls installation, temporary access road construction, crane pad grading, foundation installation, structure assembly and erection, conductor and shield wire installation, and restoration following completion. All these activities can create temporary inconvenience such as traffic delays and detours, potentially brief electrical outages to customers, increased heavy equipment traffic, dust, and noise.

The Company will make every effort during construction to be respectful of the environment and existing land use. Activities will be conducted in accordance with applicable federal, state, and/or local requirements. After construction, general maintenance activities include periodic ROW vegetation management and inspections to ensure the safe and reliable operation of the transmission line.

1.4 Project Timeline and Overview of Regulatory Approvals

General Timeline – AEP initiated the Project's transmission siting process in August 2022. The Siting Team developed preliminary Study Segments between August 2022 and April 2023. The Project's virtual public open house period occurred from April 4 to May 19, 2023 with two in-person open house meetings held on May 2 and May 3, 2023. The purpose of the public comment period was to present the preliminary Study Segments to the public and gain feedback. The Company gathered the resulting public and stakeholder feedback to revise the Study Segments and compile them into Alternative Routes between May and June 2023. The Alternative Routes were analyzed and the Proposed Routes were selected in December 2023. Throughout the route development process, the Company met with various government officials, landowners, and stakeholders to obtain feedback and provide updates on the Project.

Regulatory requirements – The Project is needed to meet customer needs and therefore requires a Letter of Notification (4906-6-05) to be filed with the Ohio Power Siting Board (OPSB), for each transmission line. Pending approval from the OPSB, construction is expected to begin on the first transmission line in October 2024 to meet an April 2026 in-service date. The second transmission line is expected to begin construction in April 2026 to meet an April 2027 in-service date. Storm Water Pollution Prevention Plan (SWP3) and Erosion and sediment control plans will be prepared in accordance with the Ohio Environmental Protection Agency (OEPA) Permit Number OHC000006. OEPA approval of such plans typically take up to one month. No discharge of stormwater to a County Municipal Separate Storm Sewer Systems (MS4) is anticipated.

A wetland delineation of the Proposed Routes will determine if any wetlands or other Waters of the U.S are located within the ROW. If wetlands are impacted by the construction of the Project, additional permitting with the United States Army Corps of Engineers (USACE) and/or State of Ohio may be required.

1.5 Goal of the Siting Study

The goal of the Vassell – Green Chapel Transmission Enhancements Siting Study (the "**Siting Study**") is to gain an understanding of the constraints and opportunity features in the Study Area to facilitate the development of Study Segments, evaluate potential impacts associated with the Study Segments, identify Alternative Routes, and ultimately select two Proposed Routes,

connecting the three End Points. A Proposed Route is the route that (1) is most consistent with the siting guidelines (see **Section 2.4**); (2) reasonably minimizes adverse impacts on the natural and human environments; (3) minimizes special design requirements and unreasonable costs; and (4) can be constructed and operated in a safe, timely, and reliable manner. **Section 2.0** describes the route development process to meet the goal of the Siting Study. Due to resiliency and redundancy criteria, the Proposed Routes need to be independent and cannot parallel one another for their entire length. The Siting Team made all attempts possible to separate their alignments and minimize paralleling the two Proposed Routes where possible.

2.0 ROUTE AND SITE DEVELOPMENT PROCESS

2.1 Siting Team

The route development process was initiated in 2022 when a siting team was assembled. It included American Electric Power ("AEP") employees and external consultants with diverse expertise including transmission line and substation siting, transmission planning, impact assessment for natural and human environments, impact mitigation, engineering, construction management, project management, ROW, and public relations (the "**Siting Team**").

The Siting Team works together to develop siting criteria, identify siting constraints and opportunity features, collect and analyze environmental and design data, solicit stakeholder input, coordinate with resource and permitting agencies, develop and revise study segments and alternative routes, and analyze and report on the proposed route selection. The Siting Study documents the Siting Team's process that led to identification of a Proposed Route for each 345kV transmission line.

2.2 Route Development Process Overview

Route development is an inherently iterative process with frequent modifications made throughout the Siting Study. Iterations result from identifying new constraints; inputs from agencies, landowners, residents, and other stakeholders; periodic route re-assessments with respect to siting criteria; and adjustments to the overall route network. The Siting Team uses specific vocabulary to describe routes at various stages of development. An overview of the route development process and related vocabulary follows.

Initial route development efforts start with identifying the **Project Endpoints.** Endpoints may include substations, switch stations, tap points, or other locations defined by the Company's planners and engineers. Next, **Constraints and Opportunity Features** are identified and mapped within the **Study Area**, which is a defined region including the Project Endpoints and area in between **(Figure 3, Step 1)**. The initial constraints and opportunity features are typically

identified using readily available public data sources and supplemented with stakeholder input and field inspections.

Once the Project Endpoints, Study Area, and Constraints and Opportunity Features are identified, the **Siting Team** develops an array of **Conceptual Routes** for the Project adhering to a series of general siting and technical guidelines **(Step 2)**.

Where two or more of these Conceptual Routes intersect, **Study Segments** are formed between two common points of intersection. Together, the assemblage of Study Segments is referred to as the **Study Segment Network (Step 3)**.

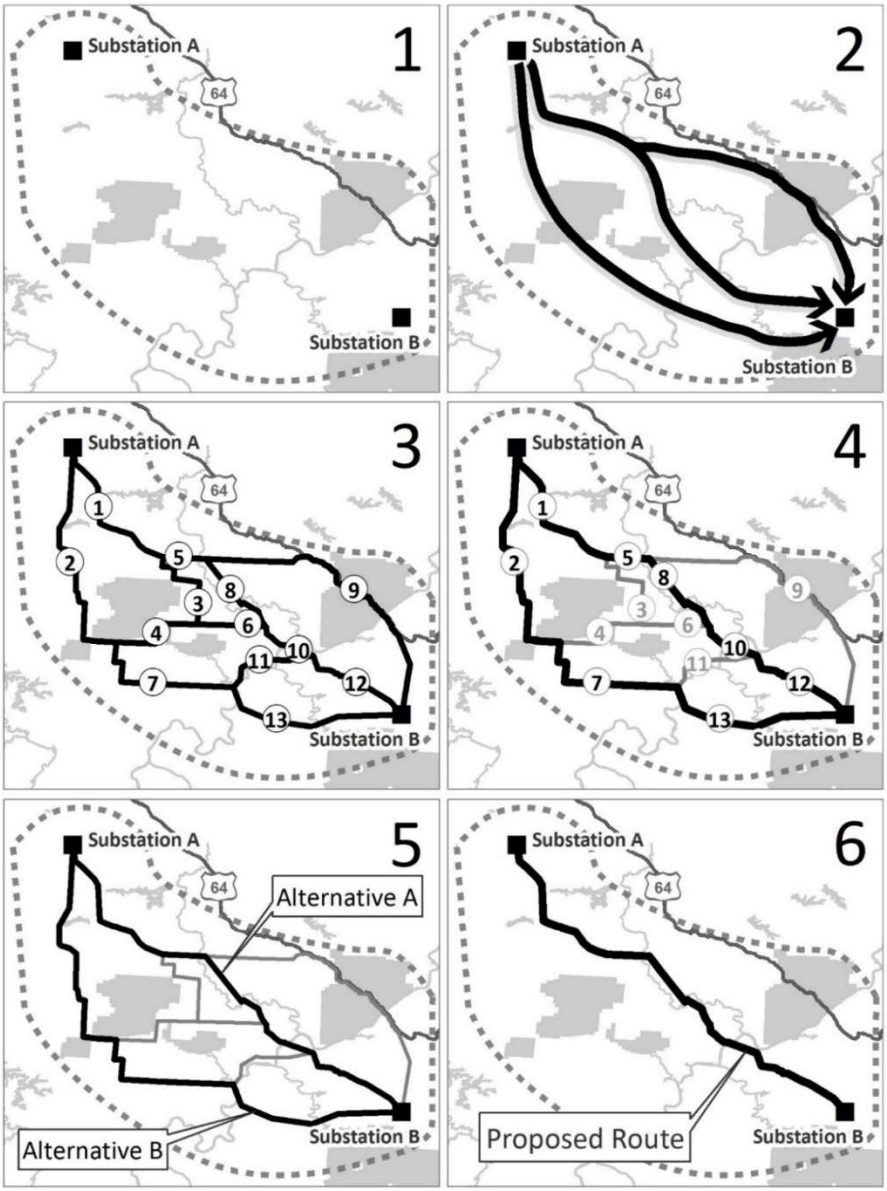


Figure 3. Route Development Process Steps

As route development progresses, the Siting Team continues to evaluate new data (e.g., public and stakeholder input and field inspections) and modifies Study Segments in the network, if necessary, to develop a **Refined Study Segment Network (Step 4)**. Eventually, **Alternative Routes** are developed by assembling Study Segments that reasonably meet the **Siting Guidelines** into individual routes to be analyzed further **(Step 5)**. Assessment and comparison of Alternative Routes are undertaken by considering potential natural and cultural resources, land uses, and engineering and construction concerns. Ultimately, through a quantitative and qualitative analysis and comparison of

Alternative Routes, the Siting Team identifies a **Proposed Route (Step 6),** which is the route that best meets Siting Study goals (Section 1.5).

2.3 Data Collection

The following sources of information were used to develop data for the Siting Study. Data was reviewed and collected for existing and historic land uses, natural resources, cultural resources, transportation facilities, and existing utility and linear features. A detailed table of data sources used for this study is provided in **Attachment A** – GIS Data Sources. The Siting Team collected and reviewed the data, as described in the following sections, to support the Siting Study.

2.3.1 Geographic Information System (GIS) Data Collection

Digital aerial photography and georeferenced topographic maps are both important tools for route selection and serve as essential base maps and information sources. The primary sources of aerial imagery and topography mapping include:

- United States Department of Agriculture (USDA) National Agriculture Imagery Program (NAIP) (2021).
- NearMap World Imagery and map service (2023).
- ESRI World Imagery map service (dates vary).
- U.S. Geological Survey (USGS) 7½ minute topographic quadrangle maps (2021): Jersey, Johnstown, New Albany, and Sunbury.

Initial review of the project area by the Siting Team identified likely opportunities and constraints. As additional data was collected, siting opportunities and constraints were modified, as needed. Existing GIS data sets obtained from many sources including federal, state, and local governments were used extensively during the siting study. Much of this information was obtained through official agency GIS data access websites, some was provided directly by government agencies, and the Siting Team created some by digitizing information from paper-based maps, aerial photo interpretation, interviews with stakeholders, and field inspections. The team's geographers, natural resource scientists, and siting experts interpreted the physiography, geology, vegetation, and land use of the area to supplement and enhance that available data from the state/federal agencies.

GIS data sources vary with respect to their accuracy and precision. For this reason, GIS-based calculations and maps presented throughout this study should be considered reasonable approximations of the resource or geographic feature they represent and not absolute measures or counts. The data and calculations presented in this study allow for relative comparisons among project alternatives. Field reconnaissance is conducted to verify certain features (e.g., locations of residential, commercial and industrial buildings).

2.3.2 Federal, State, and Local Government Coordination

The Siting Team obtained information from or contacted various federal, state, and local agencies and/or officials to inform them of the Project and request data for the route development process. The agencies contacted are listed below. Copies of agency correspondence are included as **Attachment C**.

Federal Agencies

- United States Fish and Wildlife Service (USFWS)

State Agencies

- Ohio Department of Natural Resources (ODNR)
- Ohio Department of Agriculture (ODA)
- State Historic Preservation Office (SHPO)

Local Agencies and/or Officials

- Delaware County
- Licking County
- Berkshire Township
- Harlem Township
- Hartford Township
- Jersey Township
- Monroe Township
- Plain Township
- Trenton Township
- City of New Albany
- City of Johnstown

Non-Governmental Organizations

- New Albany Company (NACo)

2.3.3 Field Reconnaissance

Siting Team members conducted field inspections within the Study Area from public viewpoints throughout the siting process (November 2022 to September 2023). The Siting Team examined Study Segments by automobile from public roads and other points of public access and correlated observed features to information shown on aerial photography, USGS 7.5 minute topographic maps, road maps, and the range of GIS sources compiled. Prior to field work, some key features such as residences, outbuildings, places of worship, cemeteries, and commercial and industrial

areas were identified and mapped in GIS. These features were then field-verified and added to the GIS database using laptops/tablets running GIS software supported by real-time Global Positioning System (GPS) during field reconnaissance efforts.

2.3.4 Public and Stakeholder Input

The consideration of public and stakeholder input is critical to the route development process. Landowners and stakeholders provide information and recommendations to aid the Siting Team in the development and refinement of study segments and alternative routes. A project-specific outreach plan was developed. More information on how public and stakeholder input was gathered and used for the Project can be found in **Section 3.6**.

2.4 Siting Guidelines

General and technical guidelines aid the Siting Team in developing feasible study segments to meet the need of the Project.

2.4.1 General Guidelines

To the extent reasonable and practical, the Siting Team used the following general siting guidelines to help develop study segments and routes:

- Avoid crossing or minimize conflict with designated public conservation and protected lands such as national and state forests and parks and local conservation easements.
- Avoid or minimize new crossings of large lakes, streams and large wetland complexes, critical and protected habitats, and other unique or distinct natural resources.
- Avoid or minimize habitat fragmentation in unfragmented areas and impacts on designated areas of biodiversity concern.
- Maximize the separation distance from and/or minimize impact on dwellings and community facilities, cemeteries, schools, daycare facilities, hospitals, historic resources, and designated landmarks.
- Avoid or minimize conflict with existing land uses and future development with a proposed plan, schedule, and permitting process underway.
- Minimize interference with economic activities (e.g., center pivot irrigation, natural gas activities, and industrial facilities).
- Consider using or paralleling existing ROWs or other linear features and infrastructure when feasible. When paralleling existing facilities, however, reliability issues and mitigation requirements must be evaluated.
- Consider paralleling property lines, land use breaks, and land cover edges.

- Consider property owner and stakeholder input.
- Avoid conflicts with designated private, public, or military aviation facilities, as regulated by the Federal Aviation Administration (FAA).
- Minimize environmental impact and construction/maintenance costs by selecting shorter, direct routes.
- Consider safety with respect to construction, maintenance, and operation of the facilities.
- Consider construction concerns such as access, road traffic control, outages, pipeline mitigations, railroad interactions, existing telecommunication line and distribution line conflicts, etc.
- Minimize environmental impact by considering routes that minimize the overall length of access roads, length on steep slopes, and waterbody crossings.
- The fair treatment and meaningful involvement of every person, regardless of race, color, national origin, income, faith, or disability (EPA.gov).

2.4.2 Technical Guidelines

Technical guidelines are driven by the physical characteristics and engineering limitations of the structures and lines themselves, design criteria necessary to meet the Company's design standards, North American Electric Reliability Corporation (NERC) reliability standards, National Electric Safety Code (NESC) standards, and industry best practices for construction. The technical guidelines were informed by (1) the technical expertise of engineers and other industry professionals responsible for the reliable, safe, and economical construction, operation, and maintenance of electric system facilities, (2) NERC reliability standards as implemented by PJM (the regional transmission organization that monitors the electric grid in 13 states), and (3) industry best practices.

The Siting Team considered the following technical guidelines during study segment and route development to extent practical:

- Minimize crossing high-voltage (HV) transmission lines.
- Consider paralleling extra-high-voltage (EHV) transmission lines, unless other operational and system reliability issues are identified.
- Maintain a minimum of 125 feet of centerline-to-centerline separation when paralleling 345 kV voltage transmission lines and a minimum of 150 feet of centerline-to-centerline separation when paralleling 765 kV voltage transmission lines.
- When paralleling existing and/or proposed transmission lines, verify there are no reliability issues by locating two lines adjacent to each other.

  - If no reliability issues are identified, parallel transmission line corridors with no more than two assets in total are preferred.
- If paralleling existing pipelines, evaluate mitigation and permitting requirements and any additional impacts or associated costs for construction and/or long-term maintenance.
- If crossing a pipeline corridor is required, 60 to 90 degree crossings are preferred.
- Minimize angle structures; if angles are needed, minimize angles greater than 30 degrees. Angles greater than 30 degrees require two-pole structures, which are significantly more expensive and result in a greater footprint to the impacted area.
- Minimize structures on steep slopes (generally, this is more than 20% slope for angle structures and more than 30% slope for tangent structures), particularly if guy wires are required for construction.
- Minimize distribution underbuild or co-location on transmission structures, if possible.

3.0 ALTERNATIVE ROUTE IDENTIFICATION

3.1 Project Endpoints

The project endpoints include the Company's existing Vassell 345 kV Station and the new Curleys and Green Chapel stations. The stations' locations were determined by customer need and development, as identified in the studies previously completed and approved by the OPSB. The Company identified the need for two independent 345 kV transmission lines to support customer development and the accelerated electrical needs in the region.

3.2 Study Area Description

A Study Area is the territory in which line route alternatives can be sited to feasibly meet the Project's functional requirements and reasonably minimize environmental impacts and project costs. The boundaries of the Study Area for the Project were determined by defining a broad area that encompassed practical and conceptual routes between the three endpoints.

Given these considerations, the Siting Team identified a study area encompassing approximately 31.4-square-miles (the "Study Area," see **Map 1, Attachment A**). The Study Area is generally bounded by the Company's existing Kammer – Dumont 765 kV Transmission Line to the north; Johnstown and Raccoon Creek to the east; the proposed Curleys Station and northern New Albany city limits to the south; and the Company's existing Hyatt – Corridor 345 kV Transmission Line to the west. The Delaware-Licking County line bisects the Study Area, running north to south.

Overall, most characteristics within the Study Area coincide with those described for the broader project area (see **Section 1.1**). Distinctive factors within the Study Area that present routing opportunities or constraints for the Project are discussed below in **Section 3.3**.

3.3 Constraints and Opportunity Features

The Siting Team identified and mapped siting constraints and opportunity features within the Study Area as described below and shown on the Study Area map (**Map 1, Attachment A**).

Constraints

Constraints are specific areas that should be avoided to the extent practical during route development. Using readily available public data sources, the Siting Team initially identified large constraints during the beginning of the route development process. Major constraints that influenced route development are discussed below.

Natural Features

The Company acquired documentation of a wetland mitigation area within the northwestern-most portion of the Study Area, immediately south of the existing Vassell Station (see **Map 1, Attachment A**), whose location limited routing concepts in that specific area. Additionally, the Siting Team became aware of a NRCS/USACE wetland mitigation project on a property along Woodtown Road during the public and stakeholder input process (see **Section 3.6.4**).

Several larger named streams (e.g., Duncan Run, Kiber Run, Raccoon Creek, and South Fork Rattlesnake Creek) and their unnamed tributaries (UNTs) flow through the Study Area, with Federal Emergency Management Agency (FEMA) designated 100-year floodplain and/or regulatory floodway and NWI wetlands located within and/or adjacent to their riparian corridors. One particular constraint area is where Duncan Run and an UNT intersect near the middle of the Study Area and is known to flood local roads and the surrounding area. Rainbow Lake, located in the southeastern portion of the Study Area, is the singular known named waterbody.

Agricultural and residential land uses are dominant within the Study Area; therefore, forest cover primarily occurs within riparian corridors and woodlots between agricultural and residential properties. Topography within the Study Area is relatively flat; therefore, steep slopes and complex terrain were not identified as a significant siting factor. The Siting Team specifically considered woodlands, streams, and wetlands as constraints present within the Study Area, avoiding these natural features to the extent practicable.

Existing Land Uses

The largest constraint in the Study Area is residential and commercial development along roadways. Major roads that presented constraints during route development included Miller-Paul Road, OH-37, OH-605, Center Village Road, and Fancher Road. There are no public airports, airstrips, or helipads within the Study Area; however, one recent FAA-approved private airstrip is located 0.1 mile north of Edwards Road and was noted as a significant constraint when reviewing landowner and public comments (see **Section 3.6.4**). Four existing FCC towers were identified within the central and southern portions of the Study Area but did not heavily constrain the route development process.

Future Development

The Study Area is located within a region of central Ohio that is subject to major residential and mixed-use commercial/industrial development in the upcoming years. The Siting Team generally avoided paralleling roads within the Study Area to minimize interreferences with future development, including impacts to construction and the overall residential viewshed given the size of the proposed structures and ROW.

According to plans acquired from local governments and agencies during stakeholder coordination (see **Section 2.3.2**), suburban sprawl with mixed residential-commercial growth is anticipated north of New Albany and west of Johnstown, which is located near the project end points. The City of New Albany's primary developer, the New Albany Company (NACo), was identified as a key stakeholder early in the Project's siting process. Select properties owned by NACo were also considered for potential routing opportunities (see **Section 3.6.3** below).

Interstate Pipelines

The Study Area includes two major interstate pipelines: the Marathon Heath-Findlay Pipeline, which bisects the Study Area northwest/southeast; and a Columbia Natural Gas Pipeline, which traverses southwest to northeast throughout the southeastern portion of the Study Area. The Siting Team did not consider either of the interstate pipelines within the Study Area as suitable routing opportunities, namely because of the associated costs for construction and/or long-term maintenance, such as cathodic protection, when building a 345 kV transmission line parallel to existing oil/gas infrastructure.

Small Scale Constraints

As the Siting Team developed Study Segments, smaller site-specific constraints were identified (using readily available public data sources and stakeholder input). Through the iterative process of route development (described in **Section 2.0**), the Study Segments were adjusted to avoid small constraints where feasible. Small constraints include but are not limited to individual residences (houses, mobile homes, and multi-family buildings); individual listed or eligible resources under National Register of Historic Places (NRHP); commercial and industrial buildings; outbuildings, barns, and silos; cemeteries; churches; schools; small wetlands or ponds; radio and communications towers; and oil or gas wells.

Opportunity Features

Opportunity features are typically existing corridors, areas or edges where a transmission line would be compatible land use, or its presence would be reduced by an existing linear feature. Opportunity features typically considered include other linear infrastructure and utility corridors, rail lines, and roads, but may also include land cover edges, unused portions of industrial or commercial areas, or parcel boundaries. Key siting opportunities are presented in the Study Area map (**Map 1, Attachment A**) and described below.

Utility Corridors

The Siting Team identified several existing Company-owned transmission lines in relation to the Project's endpoints: the existing Kammer – Dumont 765 kV Transmission Line to the north of the

Study Area, the existing Hyatt – Corridor 345 kV Transmission Line to the west of the Study Area, and the existing Conesville – Corridor 345 kV Transmission Line near the southwestern portion of the Study Area. Unfortunately, limited paralleling opportunities were identified along these existing transmission corridors due to reliability concerns with placing two extra high voltage (EHV) facilities in proximity to one another and residential development adjacent to the ROW. The Siting Team limited paralleling existing EHV corridors in a single location for approximately one to two miles or less to effectively address operation and system reliability concerns. Similarly, the Siting Team evaluated locating the two new 345 kV transmission lines parallel to one another for approximately three miles. Apart from these operation and system reliability concerns, transmission line parallel alignments were further limited due to potential ROW encroachments and/or potential limitations or interferences with existing or proposed surrounding land uses.

Property Boundaries and Land Use

Paralleling property boundaries are generally considered an opportunity as this can minimize impacts to property owners. The Siting Team prioritized paralleling property boundaries, especially where existing transmission corridors were otherwise unavailable, to avoid bisecting the central, usable portions of undeveloped properties. However, paralleling parcel boundaries is not always possible due to the size and cost of the infrastructure required to add turn angles to parallel parcel boundaries. Large tracts of cultivated cropland are prevalent throughout the Study Area, which provided suitable pathways for circumnavigating the existing and proposed development along roads.

Transportation Corridors

Dominant transportation corridors identified include OH-605, which bisects the western portion of the Study Area north to south; US-62, which bisects the southern portion of the Study Area northeast to southwest; and OH-37, which traverses the eastern portion of the Study Area in a general northwest to southeast direction. A network of township and county roads is present within the Study Area, connecting residential and agricultural properties to main state route corridors (OH-605 and OH-37) and US-62.

Because of the associated structure footprint, structure height, and ROW width required for the Project (see **Section 1.2**), related to the need for EHV, limited transportation corridor paralleling opportunities were considered. Paralleling roads with a 345-kV transmission lines can significantly increase viewshed impacts as homes are often located along local roadways. Routing concepts did consider proximity to local roads for construction, operation, and maintenance access.

3.4 Routing Concepts

Using the opportunities/constraints identified within the Study Area and the established siting guidelines developed by the Siting Team, Routing Concepts were identified for the Project, as shown on **Map 2, Attachment A.** Generally, the Routing Concepts considered following existing linear utility corridors to the north and west, while avoiding large constraints, such as existing or proposed residential and commercial/industrial land uses, where possible.

For descriptive purposes, the Project is divided into three areas (northwestern, central, and southeastern), as detailed below.

Northwestern

In the northwestern portion of the Study Area, primary routing concepts focused on paralleling the existing Kamer – Dumont 765 kV line, and the Hyatt – Corridor 345 kV line, where appropriate, and following agricultural property boundaries or other breaks in developed land uses to minimize impacts to the surrounding developed land uses and natural environment.

Notable constraints in this area include South Fork Rattlesnake Creek and UNTs of Big Walnut Creek, as well as residential development along OH-37, OH-605, and other dominant local roads (e.g., Blamer Road, Clover Valley Road, County Line Road, Edwards Road, Green Chapel Road, and Millers Church Road). Large streams, residential development, and the wetland mitigation area south of the existing Vassell Station limited the number of potential routes exiting the station to the south.

Central

The interstate pipelines were not considered an opportunity within the Study Area. The primary routing concepts within the central portion of the Study Area followed property boundaries or other breaks in developed land uses. Central Routing Concepts attempted to cross open agricultural properties to minimize impacts to the surrounding residential development and natural environment.

Notable constraints in the area include Duncan Run and its upstream tributaries, residential development along US-62 and other major local roads (e.g., County Line Road, Green-Cook Road, Lewis Road, Montgomery Road, and Needles Road), and Clover Valley Golf Club.

Southeastern

The Siting Team identified several routing concepts for the southeastern portion of the Study Area that included paralleling portions of the existing Company-owned Conesville – Corridor 345 kV Transmission Line, following agricultural property boundaries or other breaks in developed land uses, and paralleling limited portions of local roads (County Line Road and Trenton Road).

Prominent constraints within the southeastern portion of the Study Area include the existing and proposed residential and mixed-used commercial/industrial development located between Johnstown and New Albany, along several major local roads (e.g., Duncan Plains Road, Center Village Road, Fancher Road, Trenton Road, Robins Road, Vans Valley Road, and Woodtown Road).

3.5 Study Segment Development

The Siting Team developed a series of Study Segments based on the Routing Concepts and criteria described in Section 2.0. Between the fall of 2022 and the spring of 2023, the Siting Team developed a Study Segment Network[1] (as illustrated in **Map 3a, Attachment A**), such that a singular Study Segment could be potentially evaluated for either of the two independent routes: the Vassell – Curleys 345 kV Transmission Line and the Vassell – Green Chapel 345 kV Transmission Line. The resulting Study Segment Network included 98 preliminary Study Segments and was announced in April 2023 to collect public input.

As the siting effort evolved, Study Segments were modified, eliminated, or added, as described to further detail in **Section 3.6** below. These changes were primarily driven by input received during the public and stakeholder engagement process in addition to preliminary siting criteria data comparisons. The resulting revised Study Segments (see **Map 3b, Attachment A**) were compiled into Alternative Routes, as described below in Section 4.0.

3.6 Public and Stakeholder Input

3.6.1 Public Communications and Outreach

The Project's public communications and outreach process began in early 2023, when the Company initiated stakeholder engagement by coordinating with local governments and agencies. In early April 2023, the Company's representatives mailed information packets to landowners crossed or adjacent to the preliminary Study Segments, notifying them about the upcoming in-person open house meetings and virtual open house and the public comment period, where they could learn more about the proposed Project and provide feedback. The mailings to property owners consisted of a letter and fact sheet, which provided a proposed high-level schedule for the first power grid addition and a link to the project website (https://aeptransmission.com/ohio/GreenChapel/) for the virtual open house component, as described below in **Section 3.6.2**. The mailings also included contact information for the AEP Outreach Specialist so landowners could submit comments and questions. Additionally, a news

[1] Following the development of Conceptual Routes, the Siting Team developed and reviewed preliminary Study Segments internally (prior to public announcement). As a result, some alignments were removed, combined, or otherwise modified, resulting in some missing numbers along the numerical sequence of 1 through 105.

release was posted to the AEP website to announce the Project and the in-person/virtual open house components.

The first in-person open house meeting took place on May 2, 2023 at the Northridge High School and the second in-person open house meeting took place on May 3, 2023 at the Sunbury United Methodist Church. In addition to providing informational stations hosted by subject matter experts (e.g., planning, engineering, field activities, vegetation management), the in-person open house meetings also provided a siting station equipped with many Architectural D size (34" x 22") map books of the preliminary Study Segments at a 1:6,000 scale (1 inch = 500 feet). The Siting Team encouraged landowners to mark-up the maps with a permanent marker to indicate any existing or future property features, which would be reviewed later during the Study Segment evaluation and refinement process (see **Section 3.7**).

3.6.2 Project Website and Virtual Open House

The Project's website invited visitors to participate in a virtual open house, which took place between April 4 and May 19, 2023. The virtual open house was set up similarly to an in-person open house, with virtual "stations" and information related to engineering and design of the structures, the project need, real estate and ROW issues, and the siting process. An interactive map was provided on the virtual open house website for the public to review. Participants were encouraged to document the location of their houses, places of business, properties of concern, or other sensitive resources on virtual comment cards.

3.6.3 Other Stakeholder Input

In early 2023, the Siting Team initiated stakeholder engagement with local governments, other agencies, and other key stakeholders within the Study Area via in-person and/or virtual meetings (see **Section 2.3.2**). Stakeholders were provided with project information and maps and were encouraged to provide any additional information on proposed future development in the surrounding area. Two of the local stakeholders provided the Company with specific information for their geographic area, as described below.

New Albany Company (NACo)

NACo, the primary developer of New Albany, was identified as a key stakeholder. The Company frequently corresponded with NACo to coordinate similar economic development efforts for the project area In doing so, select parcels were identified as routing opportunities for the Project, since NACo indicated willingness to accommodate a new 345 kV transmission line corridor on their purchased properties. As appropriate, NACo provided the Company with status updates for property acquisitions and the Siting Team updated the GIS database to review the information

during Study Segment evaluation and refinement (**Section 3.7**) as well as Alternative Route comparison (**Section 5.0**).

Harlem Township

Harlem Township representatives provided the Company with their comprehensive plan, which includes their current and proposed overlay zoning districts and Clustered Residential Conservation Districts (CRCD). The Siting Team reviewed the Harlem Township zoning overlay districts during the Alternative Route evaluation and comparison process.

3.6.4 Consideration of Public and Stakeholder Input

As Company outreach representatives received public and stakeholder input via various formats (comment card, email, or telephone), the correspondence was catalogued in a GIS database. Additionally, the Siting Team digitized and catalogued the marked up in-person map books used at the public open houses within the Project GIS database. The Siting Team incorporated information from the public and stakeholders, where applicable, and considered it when evaluating and refining the Study Segments and comparing Alternative Routes (**Section 5.0**).

Overarching topics of the comments generally focused on potential impacts to agricultural activities (e.g., crop production, livestock grazing, animal husbandry) or equine operations, concerns with potential viewshed/aesthetic impacts, compatibility with potential future land development, and potential impacts to property value or nearby natural resources. Most landowners in the area supported paralleling existing EHV transmission line corridors; however, some landowners already crossed by existing Company transmission lines expressed opposition to additional poles/easements on their properties.

Some of the comments received also identified the presence of larger constraints on properties crossed by the preliminary Study Segments, including an unmarked FAA private airstrip, an ODA agricultural easement, and a recent NRCS/USACE wetland mitigation project. Additionally, several landowners along Duncan Road and Center Village Road voiced concerns about unmapped flood areas associated with Duncan Run.

3.7 Study Segment Evaluation and Refinement

Study Segments were evaluated and refined using public and stakeholder input, updated mapping, and additional field inspections, in an attempt to avoid or minimize impacts to Study Area resources. As a result, some Study Segments were removed, added, and modified as described below. **Map 3b, Attachment A** shows the Refined Study Segments.

After the public and stakeholder input phase of the Project, the Siting Team met to review comments that were written on comment cards or maps, shared in conversation with Project

representatives, and submitted online via the virtual open house. These meetings provided an opportunity to revise the Study Segment network, where feasible, based on new information provided by landowners and technical guidance provided by the engineering team. Throughout the siting process, Study Segments are evaluated and refined to avoid or minimize impacts to resources within the Study Area.

While the Study Segments are organized into geographic regions in the subsections below for better comprehension and discussion purposes, the evaluation and refinement of the Study Segments followed a more comprehensive and holistic approach. Study Segments were compared with the qualitative and quantitative data gathered for the Project. If a Study Segment was eliminated from further consideration, the Siting Team would consider any potential modifications/additions or additional eliminations to the larger Study Segment Network to determine the most feasible and appropriate alignments for compiling alternative routes.

Northern Study Segments

Study Segments within the northern portion of the Study Area appear mostly grid-like (see **Map 3a, Attachment A**) and attempted to parallel logical boundaries or linear features. The Siting Team considered some diagonal Study Segments crossing large, open agricultural fields to reduce impacts to residential development and minimize turn angles. The overall Study Segment network within the northern portion of the Study Area exhausted many routing options to gather comprehensive feedback from landowners of various existing developed land use types. Of the 40 northwestern Study Segments, 17 were eliminated (as indicated by red solid lines in **Figure 4**) and two were modified (as indicated by dashed blue lines and yellow solid lines), for a total of 23 Study Segments carried further for development into Alternative Routes.

Public input noted preference to study segments that paralleled existing transmission line corridors. Study Segments 2, 6, 9, 12, 16, and 18 (shown below in **Figure 4**) are parallel to existing transmission lines with little conflicts to residential development and parallel for less than three miles, resulting in two viable east-west corridors that were retained for the Alternative Routes. Study Segments 4, 7, 15, and 19 were eliminated from further consideration due to higher impacts to agricultural lands and lack of parallel opportunities. The remaining Study Segments within the northern portion of the Study Area were evaluated and refined to better combine with other study segments and minimize unnecessary angles or length and address landowner input received.

As shown in **Figure 4** below, several north-south oriented alignments (Study Segments 5, 8, 10, 13, 17, and 21) were eliminated from further consideration due to constructability and environmental factors, such as number of sharp turn angles (greater than 30 degrees), crossing NWI wetlands, and longer access routes. Study Segment 25 was eliminated due to its proximity

to neighboring residences in the vicinity of Trenton Road and Miller-Paul Road. Study Segments 36 and 42 were modified slightly north, to minimize potential impacts to a NRCS/USACE wetland mitigation project and better parallel parcel boundaries. Study Segments 35 and 38 were compared with the modified Study Segments 36 and 42, as they both provide similar east-west connections. Given the presence of residential properties crossed or nearby and the bisecting of multiple parcels, Study Segments 35 and 38 were eliminated. As such, the modified Study Segments 36 and 42 were carried forward and better minimize impacts to nearby residences and generally parallel parcel boundaries.

When Study Segments 25, 35, and 38 were removed, it resulted in the removal of Study Segments 27, 28, and 37 since their retention would result in either an incomplete or circuitous Alternative Route.

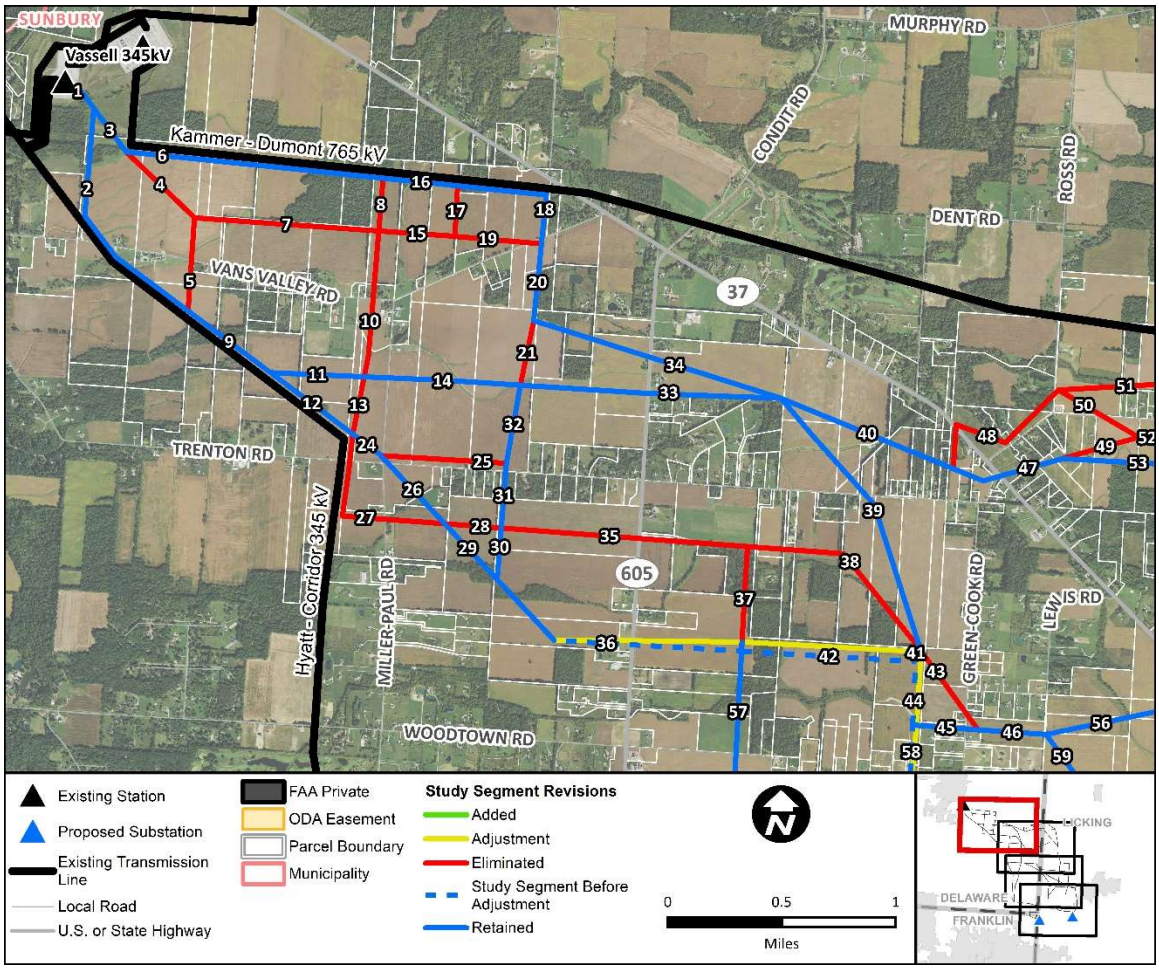


Figure 4. Northwestern Study Segment Revisions

Central Study Segments

The Siting Team's interdisciplinary review and public outreach efforts resulted in several modifications of Central Study Segments presented to the public (dashed blue lines) with

adjustments (solid yellow lines) and adding new alignments (solid green lines), as show below in **Figures 5 and 6**. The Central Study Segments are comprised of 53 total segments. Of those, nine were eliminated, 16 were modified, and two were added, for a total of 46 Study Segments carried further for development into Alternative Routes.

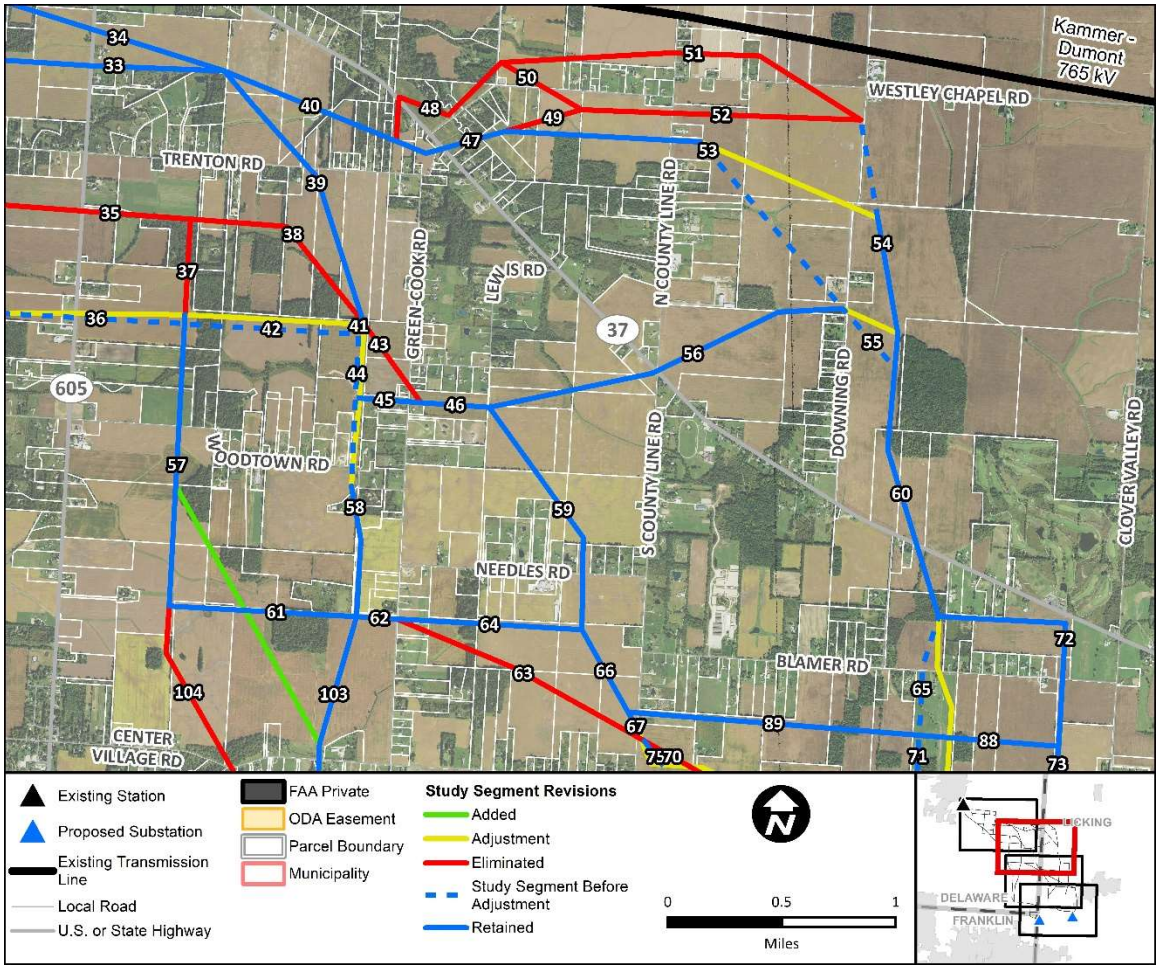


Figure 5. Central Study Segment Revisions (1 of 2)

Several eliminations of Study Segments occurred in the central project area primarily due to constructability concerns, impacts to the human environment, and engineering challenges. Overarching justifications of removing Study Segments 41, 43, 48, 49, 50, 51, 52, and 63 (**Figure 5**) included: number and severity of angle structures, potential impacts to adjacent proposed future development, and number of residences in proximity to the centerline. Additionally, the Siting Team modified Study Segments 41, 44, and Segment 58 by shifting slightly eastward eliminating constraints adjacent to proposed residential development along Woodtown Road.

One landowner owns many large agricultural tracts that are crossed by several Study Segments. During the Study Segment evaluation process, AEP siting representatives met with landowner representatives to discuss the various segments across their properties. Based on landonwer

input, modifications to Study Segments 53, 54 and 55 were made, which reduced the amount of agricultural land crossed and the severity of angle structures. Adjustments to Study Segments 53, 54, and 55 did not introduce any new landowners.

After review of public feedback gathered from the public open house comment period and a subsequent site visit, Study Segment 104 was eliminated as it impacts existing and proposed residential development along Center Village Road. Other factors supporting the elimination of Study Segment 104 included unfavorable natural environment impacts (i.e., wetlands, stream crossings, ROW tree clearing within riparian corridors). With this elimination, connections to Study Segment 103 are limited to Study Segments 57, 58, and 61 (see **Figure 5**). To create more efficient connections in the Study Segment Network, the Siting Team added two diagonal alignments between Study Segments 57 and 103. The diagonal alignments (shown as green in **Figures 5** and **6**), are entirely cross-country, but are straight and minimize angle structures.

ODA data was received after our public comment period for the Project and The Siting Team learned that several Study Segments (67, 75, 94, and 92) within the central portion of the Study Area crossed one easement area. After review, it was determined these Study Segments could be slightly modified to avoid crossing agricultural easements along Edwards Road as illustrated in **Figure 6**. Other feedback that resulted in the removal and modification of Study Segments included the identification of a privately-owned FAA airstrip (see **Figure 6**). The Warped Wing Airstrip was constructed in early 2023 and located approximately one mile northwest of Clover Valley Road and Edwards Road. Upon review and FAA status verification, the Siting Team removed Study Segment 70 and modified Study Segments 65, 61, 77, and 93, shifting those alignments eastward, in efforts to establish safe clearances from the associated air traffic. Additionally, a new alignment was added to connect this adjustment to Study Segment 91.

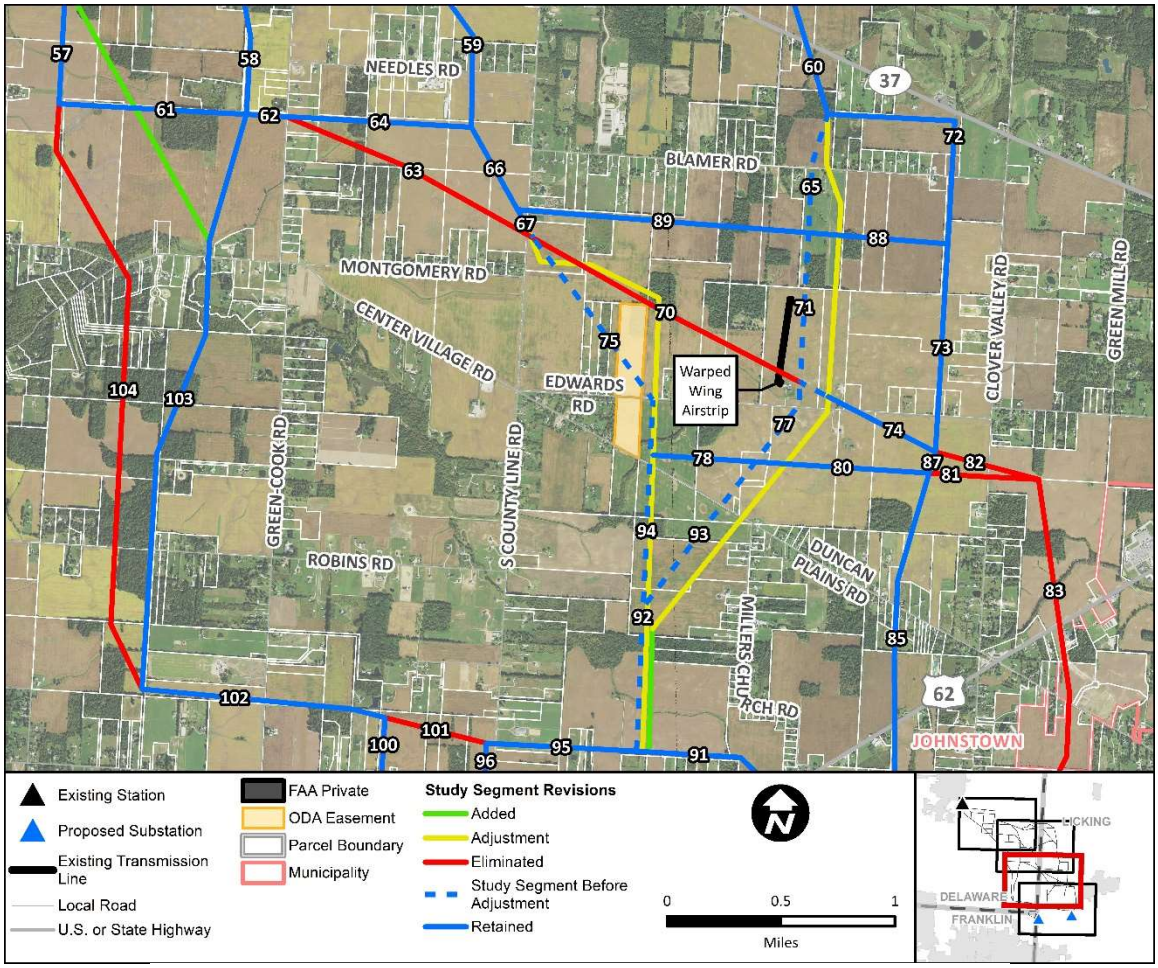


Figure 6. Central Study Segment Revisions (2 of 2)

Southern Study Segments

Opportunity features within the southern region of the Study Area were limited as existing and proposed development located between Johnstown and New Albany. The Siting Team also considered input from NACo (i.e., proposed development plans and property acquisition statuses) in conjunction with other landowner feedback while refining the Study Segments. A total of 18 Study Segments were identified for the southern portion of the Study Area. Of these, five were eliminated, two were modified, and 11 were retained, for a total of 13 revised Study Segments.

Existing and proposed residential development was identifed adjacent to the existing transmission line, which limited the available space to build another transmission line parallel to the existing alignment. As a result, the Siting Team eliminated Study Segment 98, as it was in closer proximity to homes compared to other viable options. Simiarly, Study Segment 101 was eliminated as it crossed more parcels and landowners, compared to other viable Study Segments.

Remaining Study Segment revisions within the southern portion of the Study Area are located near Johnstown and were a result of impacts to existing and future land uses. Study Segments 81, 82, and 83 were removed due to proposed development in proximity to the Village of Johnstown. In addition, Study Segments 84 and 86 were modified with slight adjustments to avoid interferences with proposed NACo development.

The Revised Study Segment Network, resulting from the Study Segment refinement process, is shown on **Map 3b, Attachment A**. The revised Study Segments represent partial alignments used to compile Alternative Routes.

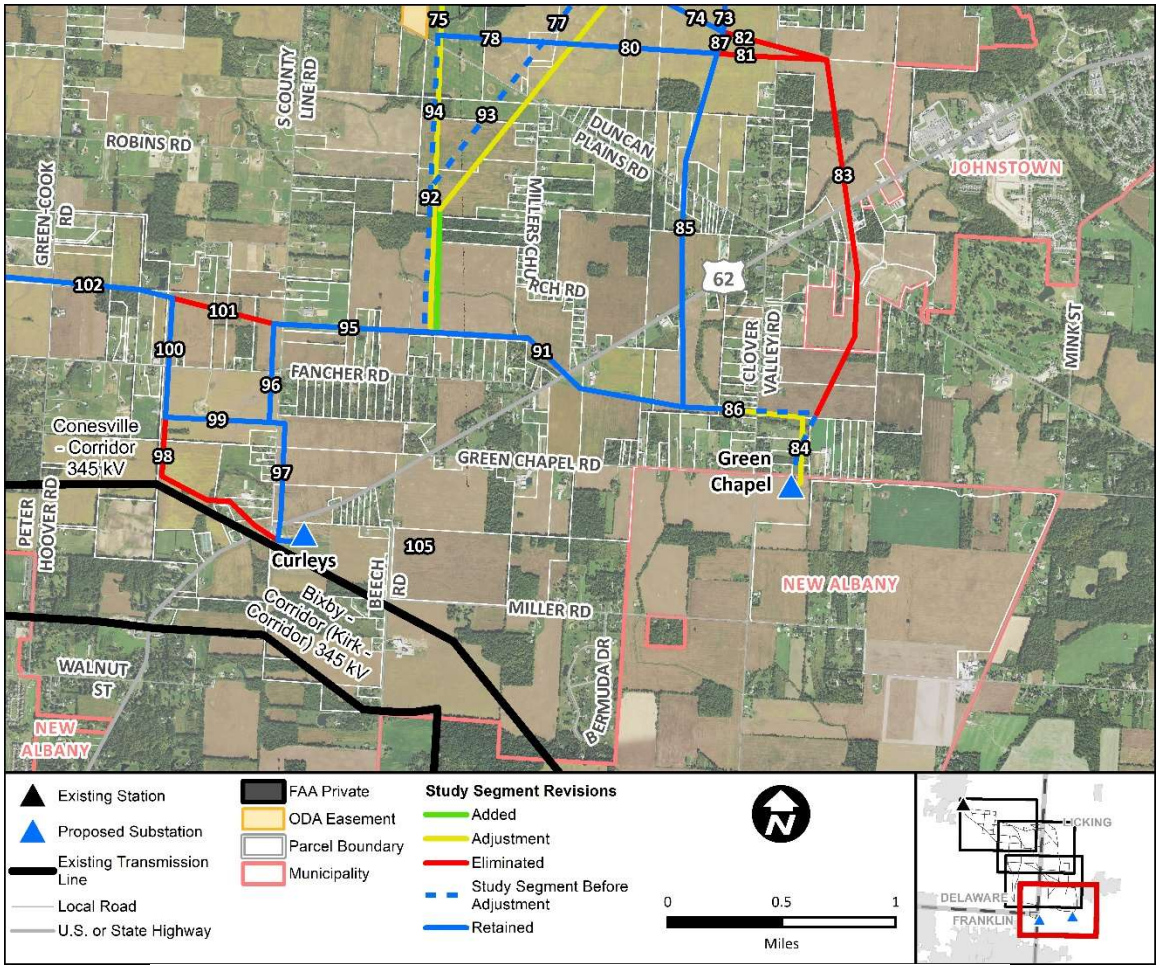


Figure 7. Southern Study Segment Revisions

4.0 ALTERNATIVE ROUTES

The Siting Team met and communicated frequently throughout the route development process, continually reviewing, modifying, and sometimes eliminating Study Segments based on field inspections, analysis, and engineering reviews. At the end of the process, the remaining Study Segments were compiled into four complete Alternative Routes (Routes A through D) to evaluate and compare for the Vassell – Curleys 345 kV Transmission Line and five complete Alternative Routes (Routes E through I) to evaluate and compare for the Vassell – Green Chapel 345 kV Transmission Line[2].

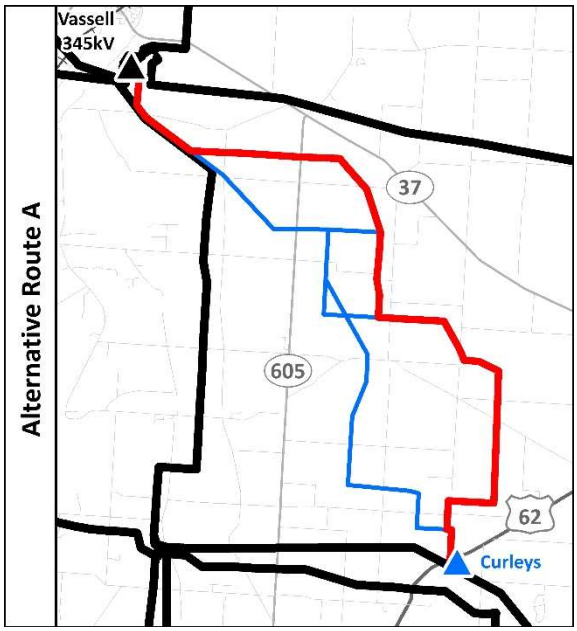
4.1 Vassell – Curleys Alternative Routes

A total of 10 unique combinations of revised Study Segments were reviewed for consideration, but the best overall combinations of the Study Segments were compiled into four Alternative Routes (A, B, C, and D) for the Vassel – Curleys 345 kV Transmission Line full evaluation. The remaining six unique combinations were dismissed from further evaluation as they represented circuitous routes that increased additional length, overall impacts, and failed to meet the goals of the Siting Study.

The Vassell – Curleys 345 kV Transmission Line Alternative Routes are described to greater detail below in **Sections 4.1.1** through **4.1.4** and shown in **Map 4a, Attachment A**.

4.1.1 Alternative Route A

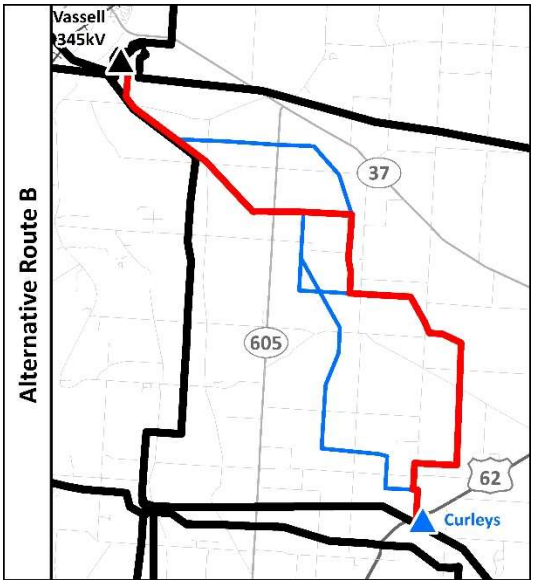
Alternative Route A, the eastern-most alignment, is 13.1 miles long and requires approximately 238 acres of new ROW. Alternative Route A exits the Vassell 345 kV Substation southward paralleling the existing Hyatt – Corridor 345 kV Transmission Line and avoiding dense residential land use along Vans Valley Road and Miller-Paul Road. After crossing Trenton Road, Alternative Route A proceeds westward and cross-country for the remainder of its alignment either by traversing or paralleling larger agricultural properties through the southeastern portion of the Study Area. Shortly before reaching the proposed Curleys



[2] Eleven revised Study Segments were used to compile Alternative Routes for both the Vassell – Curleys and Vassell – Green Chapel 345 kV transmission lines, since their alignment/geographic location was suitable for either transmission line.

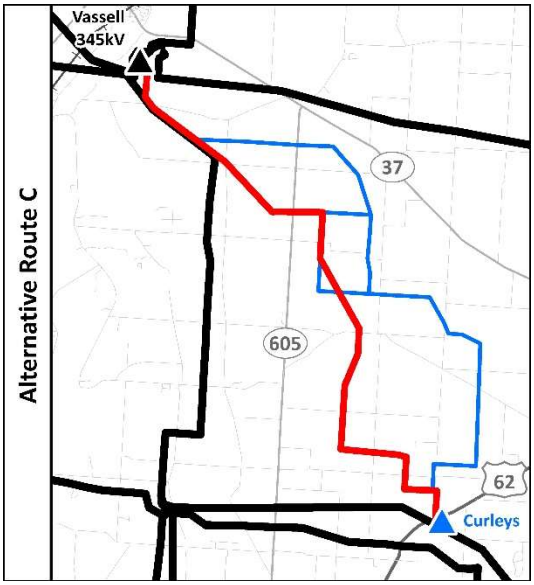
Station, Alternative Route A turns east to parallel County Line Road to avoid a cluster of residences along Fancher Road.

4.1.2 Alternative Route B



Alternative Route B combines Study Segments from the northern, central, and southern geographic areas. Alternative B is 12.9 miles long and requires 234 acres of new ROW. Alternative Route B parallels the existing Hyatt – Corridor 345 kV Transmission Line for 1.5 miles and continues in a direct trajectory, away from residences along Trenton Road. Alternative Route B turns west through clustered residential development along OH-605 to parallel the backsides of larger agricultural tracts in attempts to lessen impacts residential viewsheds and avoid potential interferences with future development in the area. At the point where it turns sharply southward, Alternative Route B shares 60 percent (5.5 miles) of its remaining alignment with Alternative Route A to reach the proposed Curleys Station.

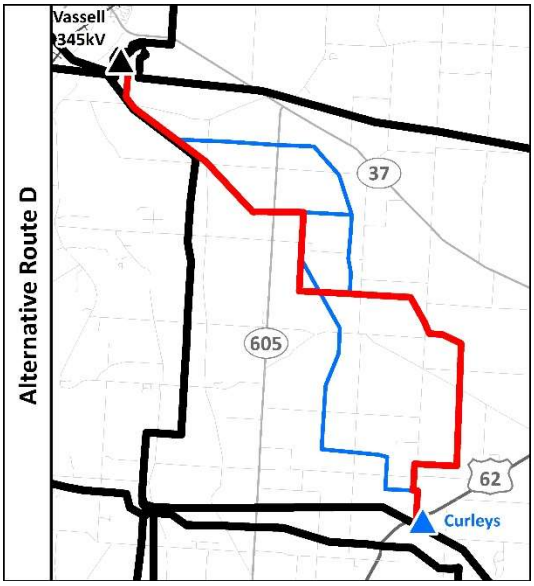
4.1.3 Alternative Route C



Alternative Route C is the western-most alignment and most direct routing option, with the shortest total length (11.9 miles), resulting in the least amount of ROW acres (approximately 216 acres). Alternative Route C shares the first portion of its alignment with Alternative Route B (approximately 4 miles) before turning 90 degrees to the south through large agricultural tracts avoiding dense residential development along OH-605 and Woodtown Road. Continuing southward, Alternative Route C, crosses at a tight residential pinch point in a flood prone area near Duncan Road and Center Village Road. To reach the Curleys Station, Alternative Route C attempts to use agricultural tracts and parcel boundaries to extent practicable.

4.1.4 Alternative Route D

Similar to Alternative Route B, Alternative Route D combines Study Segments from the northern, central, and southern geographic areas to connect project endpoints. Alternative Route D is approximately 13 miles and requires 235 acres if new ROW. Alternative Route D illustrates a relatively equal combination of Alternative Routes B and C. However, at the point where Alternative Route C turns south, Alternative Route D continues east along parcel boundaries to share its remaining alignment with Alternative Route B to the proposed Curleys Station.



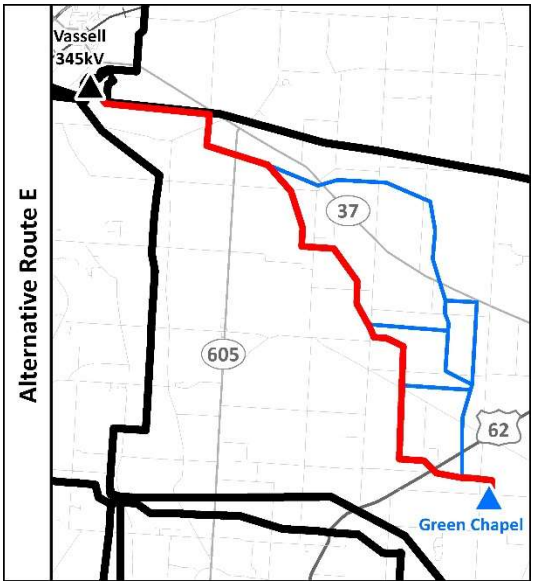
4.2 Vassell – Green Chapel Alternative Routes

A total of 20 unique combinations of the resulting Study Segments were reviewed for consideration and the best overall combinations of the Study Segments were compiled into five Alternative Routes (E through I) for the Vassell – Green Chapel 345 kV Transmission Line evaluation. The remaining 15 unique combinations were dismissed from further evaluation as they represented circuitous routes that increased length, overall impacts, and failed to meet the goals of the Siting Study.

The Vassell – Green Chapel 345 kV Transmission Line Alternative Routes are described to greater detail below in **Sections 4.2.1** through **4.2.5** and shown in **Map 4b, Attachment A**.

4.2.1 Alternative Route E

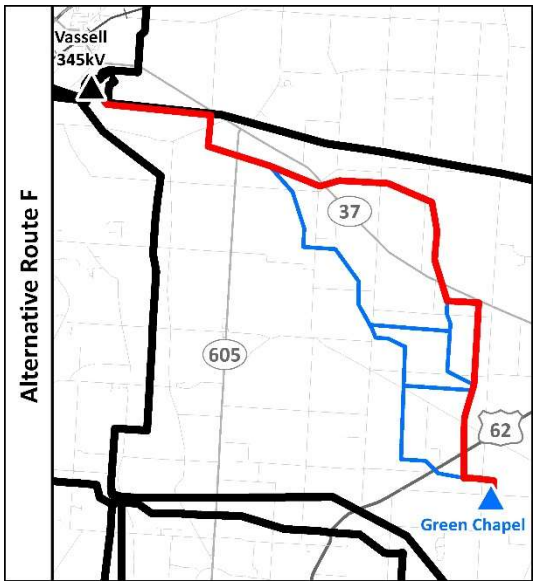
Alternative Route E, the western-most alignment, is 12.3 miles long and requires approximately 224 acres of new ROW. Alternative Route E is the shortest, most direct option for connecting the project endpoints and shares a significant portion of its alignment with Alternative Routes A, B, and D (see **Section 4.1** above). Alternative Route E exits the Vassell Substation paralleling an existing EHV corridor (Kammer – Dumont 765 kV) and avoids residences along Vans Valley Road. Alternative Route E shares the same alignment as Alternative Route A for a short distance south. Staying slightly east, Alternative Route E



separates from Alternative Route A, before turning south to join the corridors of Alternative Routes B, and D. Alternative Route E proceeds eastward to traverse behind residential properties along Fancher Road and Green Chapel Road and ultimately enter the Green Chapel Station from the north.

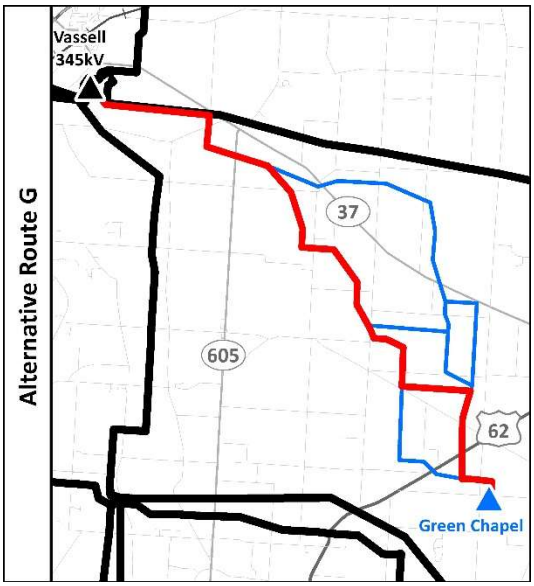
4.2.2 Alternative Route F

Alternative Route F, the eastern-most alignment, is longest route considered and is 13.3 miles long and requires approximately 242 acres of new ROW. The benefit of an eastern option is to avoid denser residential areas within the central portion of the Study Area, therefore crossing more large agricultural tracts. Additional length and turn angles are required for circumnavigating agricultural homesteads and the Clover Valley Golf Club. Challenges identified for Alternative Route F primarily occur near the intersection of US-62 and Duncan Plains Road, where dense existing and future residential or commercial/ industrial development in proximity to Johnstown is anticipated.

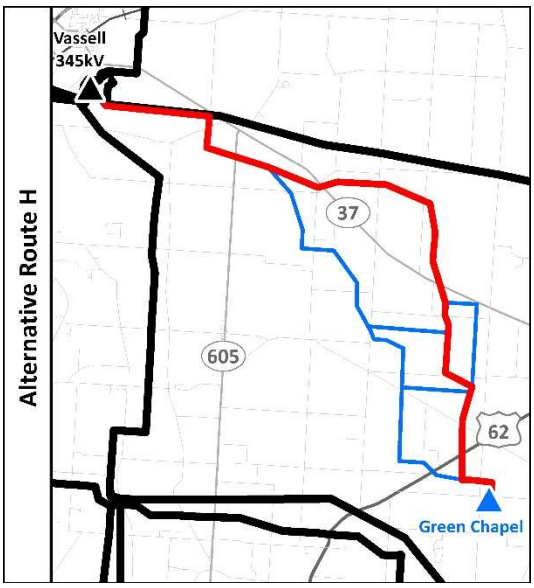


4.2.3 Alternative Route G

Alternative Route G is 12.6 miles long and requires approximately 229 acres of new ROW. Similar to Alternative Route E, Alternative Route G represents a western alignment and shares portions of its alignment with Alternative Routes A, B, and D (see **Section 4.1**). Alternative Route G shares a significant portion of its alignment with Alternative Route E, but turns 90 degrees turn to the east before crossing Duncan Plains Road to avoid crossing in backyards of residential properties along Fancher Road. In doing so, Alternative Route G uses the same far eastern alignment to reach Green Chapel Station. While Alternative Route G avoids some residential impacts, it still has a residential pinch point along Duncan Plains Road.



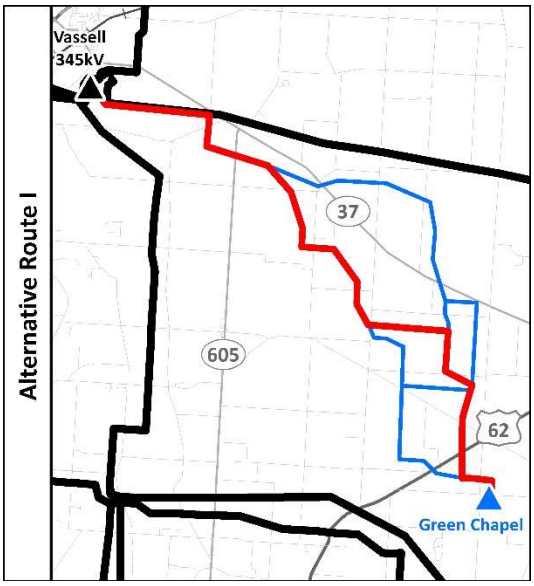
4.2.4 Alternative Route H



Alternative Route H, is another feasible eastern alignment and very similar to Alternative Route F, with the exception of one location making it slightly shorter: 13.1 miles long and approximately 238 acres of new ROW. Alternative Route H uses a different path south after crossing OH-37. Alternative Route H avoids crossing near the backyards of agricultural properties along Clover Valley Road and avoids using a sharp 90 degree turn near the state route corridor. Alternative H shares developed land use challenges near the US-62 and Duncan Plains Road intersection outside of Johnstown in order to reach the Green Chapel Station, similar to Alternative Routes F and G.

4.2.5 Alternative Route I

In total, Alternative Route I is 12.8 miles long and requires approximately 238 acres of ROW acquisition. Alternative Route I is a combination of Alternative Routes E and G and use an east-west alignment to connect the two Alternative Routes (E and G). Alternative Route I is able to avoid the residential pinch point on Center Village Road by turning east on the connector segment. Alternative Route I is able to avoid more constraints by adding several heavy turn angles, while still needing to cross through dense development along Duncan Plains Road (similar to Alternative Routes F, G, and H).



5.0 ALTERNATIVE ROUTE COMPARISON

The Alternative Route comparison provides a quantitative and qualitative analysis of potential impacts to local communities, environment, and cultural resources as well as engineering and constructability concerns. The Alternative Routes were reviewed in detail and compared using a combination of information collected in the field, GIS data sources, public input, supporting documents, and the collective knowledge and experience of the Siting Team. This type of evaluation aimed to identify potential benefits that could result from similar or shared route corridors, such as reducing impacts to the surrounding natural and built environment and optimizing key constructability factors, while minimizing reliability concerns.

The Alternative Routes for the Vassell – Curleys and Vassell – Green Chapel 345 kV Transmission Lines use the same study segments in some instances, thus resulting in some overlap, particularly in the central part of the Study Area (Attachment A, Maps 4a and 4b). Specifically, Alternative Routes A, B, and D overlap partially with Alternative Routes E, G, and I. As a result, the Company had to consider how the Alternative Routes for each 345 kV transmission line could accompany one another ("Companion Routes") from a comprehensive viewpoint, when selecting the Proposed Routes for the Project.

5.1 Natural Resources

The natural environment includes water resources, soil and geology, sensitive species, and wildlife habitat. Potential impacts are based on publicly available maps and data as well as coordination with federal, state, and local agencies. The Siting Study's goal is to avoid or minimize impacts on the natural environment to the extent practicable during construction, operation, and maintenance of the transmission facilities. Given the complexity of the comparison, the Siting Team provided separate discussions for each 345 kV transmission line. As such, the natural environment considerations for the Vassell – Curleys 345 kV Transmission Line are presented in **Table 1** and shown on **Map 5a**. Similarly, the natural environment comparison and considerations for the Vassell – Green Chapel 345 kV Transmission Line are provided in **Table 2** and identified on **Map 5b**. Both maps are compiled in **Attachment A**.

5.1.1 Soil and Water Resources

Resource Characteristics

The Study Area topography is characterized by relatively flat terrain, typical of the glaciated central region of Ohio; therefore, steep slopes and complex terrain were not identified as a significant siting factor. Elevation within the Study Area ranges from approximately 895 to 1,185 feet above mean sea level (msl). The Study Area is in the Loamy, High Lime Till Plains (55b) Level

IV Ecoregion of the Eastern Corn Belt Plains (55) Level III Ecoregion in Ohio[3]. The United States Environmental Protection Agency (USEPA) describes the Loamy, High Lime Till Plains ecoregion as a level, transitional area, characterized by slow draining soils that often require artificial drainage for agriculture. Corn, soybean, wheat, and livestock farming is dominant in this ecoregion, which has replaced the original beech forests and scattered elm-ash swamp forests.

Soils

The Siting Team reviewed the Soil Survey Geographic Database (SSURGO) to evaluate hydric (100%) and predominantly hydric (66-99%) soil mapping in conjunction with NWI data, which aids in identifying potential wetland areas not yet inventoried by USFWS. Predominantly hydric and hydric soils are common throughout the agricultural landscape of the Study Area, which is a primary existing land use identified for the Project.

Hydrology

The USACE Huntington District and the OEPA regulate lakes, rivers, streams, wetlands, and ponds in Ohio. The Study Area is within the Upper Scioto (Hydrologic Unit Code [HUC] 05060001) and Licking (HUC 05040006) watersheds. As shown on **Map 5a and 5b, Attachment A,** Duncan Run, located within the southwestern portion of the Study Area, generally flows east to west, as well as several unnamed tributaries (UNT) of Big Walnut Creek in the northern and western portions of the Study Area. Kiber Run, Raccoon Creek, and South Fork Rattlesnake Creek all primarily flow northwest to southeast within the western portion of the Study Area. Rainbow Lake is located within the southern portion of the Study Area approximately three miles northwest of the proposed Curleys Station. Other NHD waterbodies identified within the Study Area generally consist of smaller residential or agricultural ponds. No State or National Wild and Scenic Rivers are located within the Study Area.

A review of the FEMA National Flood Hazard Layer (NFHL) revealed 100-year floodplains within the northwestern and northeastern portions of the Study Area, along an UNT of Hoover Reservoir and Raccoon Creek, respectively. Additional 100-year floodplain areas are located in the southwest and southern portion of the Study Area, along Duncan Run. FEMA-designated regulatory floodway areas are concentrated along the central and western portion of Duncan Run within the Study Area. The USFWS NWI shows several agricultural and residential ponds scattered throughout the Study Area. NWI wetlands within the Study Area primarily consists of freshwater emergent wetlands (PEM) and freshwater forested/shrub wetlands (PFO/PSS), which are interspersed within the Study Area, but are mostly located within riparian corridors of the various NHD streams identified. Additionally, several freshwater ponds (PUB) are similarly

[3] USEPA Level III and Level IV Ecoregions of Indiana and Ohio.
https://gaftp.epa.gov/EPADataCommons/ORD/Ecoregions/oh/ohin_eco_lg.pdf

scattered throughout the Study Area, much of which coincide with the smaller NHD waterbodies located on residential or agricultural land.

Transmission line construction activities, such as vegetation clearing, access road construction, grading, and foundation construction can affect soil and water resources by disturbing the native structure of the soil, and thereby creating areas of higher erosion potential, compaction, and lower soil permeability/fertility, and by delivering eroded soil to nearby streams through sedimentation. Therefore, flat terrain is preferred to mitigate erosion potential, and the Routing Study considers USDA Natural Resources Conservation Service (NRCS) designated prime farmland soils, hydric soils[4], and slopes as factors when comparing routes. Prime farmland soils were not considered as a primary siting constraint for the Project, as large tracts of cultivated cropland within the Study Area provided a siting opportunity to circumnavigate residential areas. Still, the Siting Team evaluated potential prime farmland soil impacts amongst the Alternative Routes.

Wetlands

One of the goals of the Siting Study is to select a proposed route that reduces environmental permitting requirements by minimizing impacts to wetlands. Wetland disturbance can be minimized by avoiding wooded wetlands and avoiding or spanning over PEM designated wetlands. Spanning over PFO and PSS wetlands does not avoid impacts as woody vegetation must be removed within the new ROW, therefore changing the wetland status. PFO and PSS wetlands are an important constraint for overhead transmission siting, as they are typically the only wetland types that are permanently altered by ROW clearing, and typically require additional permitting with the USACE and OEPA.

Regardless of the selected route, it is worth noting that un-inventoried PEM wetlands (wetlands not yet included in the USFWS National Wetland Inventory) often correspond with mapped depressional areas characterized with hydric soils and/or floodplains. Similarly, un-inventoried PSS/PFO wetlands often correspond with mapped depressional areas located within forested riparian corridors and/or forested floodplains. From an aerial perspective, all Alternative Routes identified for the Project cross some amount of depressional areas either within agricultural tracts or forested riparian corridors within depressional areas; therefore, each of the routes has the potential to encounter additional PEM, PSS, or PFO wetlands not yet inventoried by the USFWS.

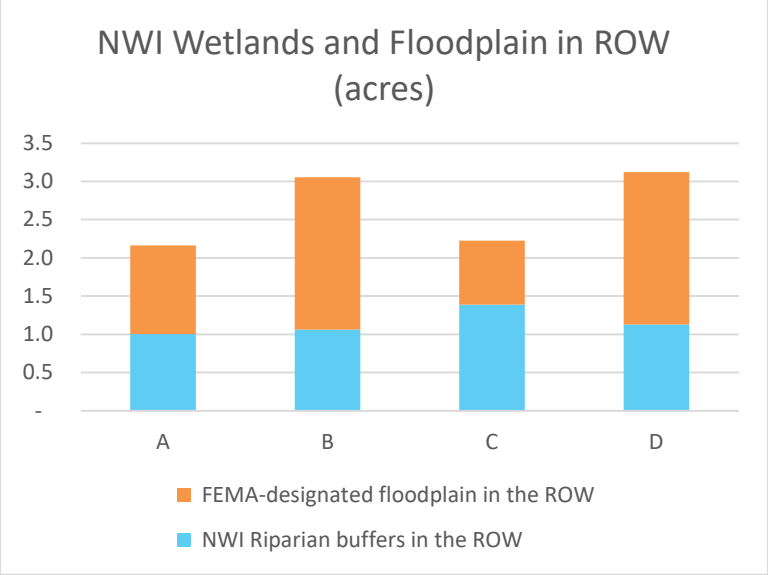
The wetland mitigation area adjacent south of the existing Vassell Station is avoided by all Alternative Routes. Field wetland delineations will be conducted along the selected routes to

[4] Prime farmland is land that has the best combination of physical and chemical characteristics for producing crops. Hydric soils are formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part.

account for any un-inventoried wetlands and/or streams, in addition to confirming the actual acreage of any wetlands and/or streams crossed. The Company will minimize in-stream and wetland impacts by spanning or avoiding them to the greatest extent practical. Wetland, riparian, and flood hazard mitigation for permanent impacts to regulated areas may be required, regardless of the route selected. The Company will obtain all necessary permits and employ specified best management practices ("BMPs") to minimize potential impacts to wetlands, as well as soil erosion and sedimentation during construction activities. Areas cleared within the ROW will be re-vegetated with compatible species and maintained in accordance with the Company's Vegetation Management Plan. Constructability and geotechnical issues are discussed to further detail in **Section 4.3**. In general, flat terrain away from rivers, streams, and waterbodies with good access and minimal hydric soil is desired.

Alternative Routes for each greenfield 345 kV transmission line were compared amongst the following siting evaluation criteria: number of NHD stream crossings, acres of FEMA 100-year floodplain in the ROW, acres of NWI wetlands within the ROW, and acres of hydric and farmland soils in the ROW.

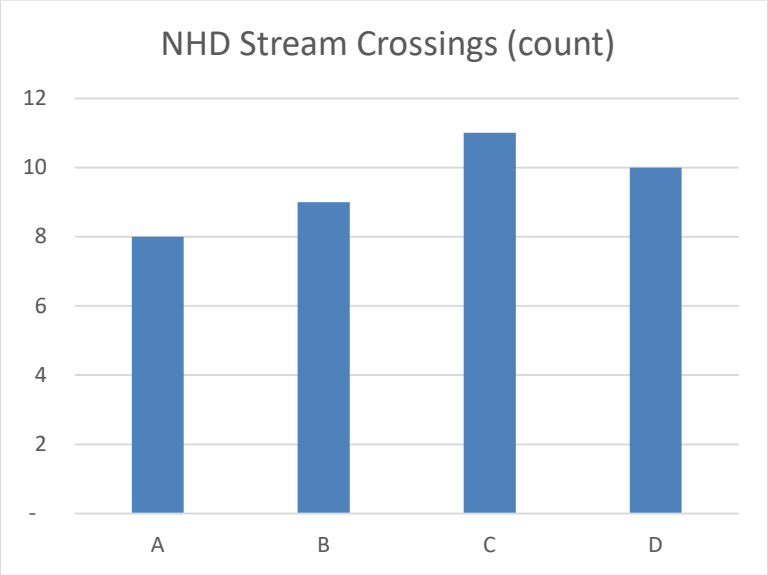
Vassell – Curleys: Alternative Route Comparison



Evaluating the combined FEMA-designated floodplain areas and NWI riparian buffers mapped within the ROW allows a comparison of potential impacts to hydrologic resources in addition to assessing potential access challenges amongst the Alternative Routes. Alternative Routes B and D are nearly identical and least favorable for the combined criteria, which cross the most FEMA-designated floodplain in their ROWs (two acres). Although Alternative Routes A and C best minimize impacts to

floodplains mapped by FEMA; Alternative Route C crosses significant unmapped flooding areas and remain a primary concern due to the proposed crossing of Duncan Run (see **Section 3.6.4**).

Outside of these combined criteria, the NWI wetlands criteria collected for the Vassell – Curleys Alternative Routes are similar: each route crosses 0.6 acre of PEM wetlands and crosses either 0.1 or 0.2 acre of PSS/PFO wetlands in the ROW.



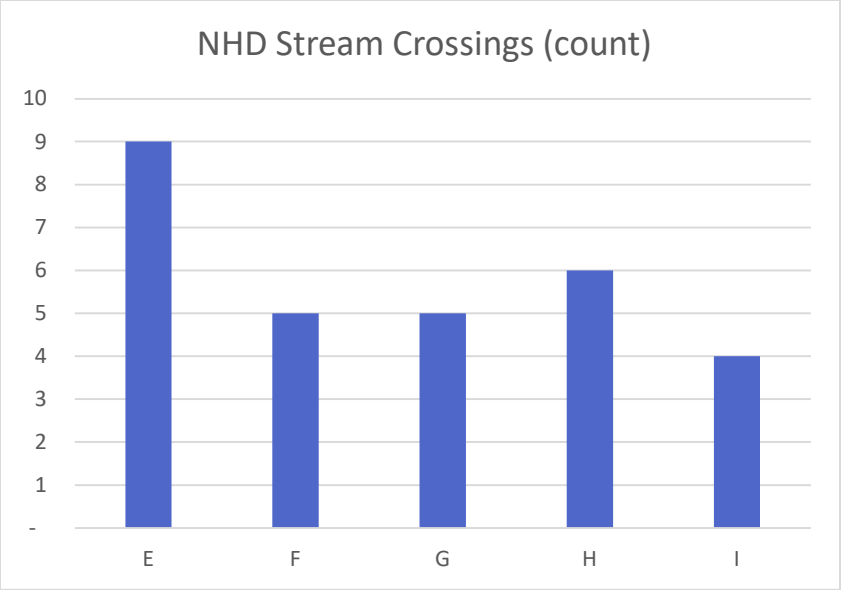
Alternative Route A crosses the least mapped NHD streams (8), while Alternative Route C crosses the most (11). Most importantly, in addition to crossing the most mapped NHD streams, Alternative Route C crosses Duncan Run at a confluence of three streams and in a challenging area where it is to flood (based on input from property owners in the area) and is likely to complicate the construction of the new 345 kV transmission line. The Company will likely span streams crossed by any chosen route and avoid any in-stream work entirely.

The Siting Team collected NRCS soils data to compare amongst the Alternative Routes. None of the Alternative Routes contain hydric (100%) soils in the ROW, but each contains predominantly hydric (66-99%) soils and prime farmland within a narrow range (see **Table 1** below). Therefore, no route is preferred over another from solely a soils standpoint.

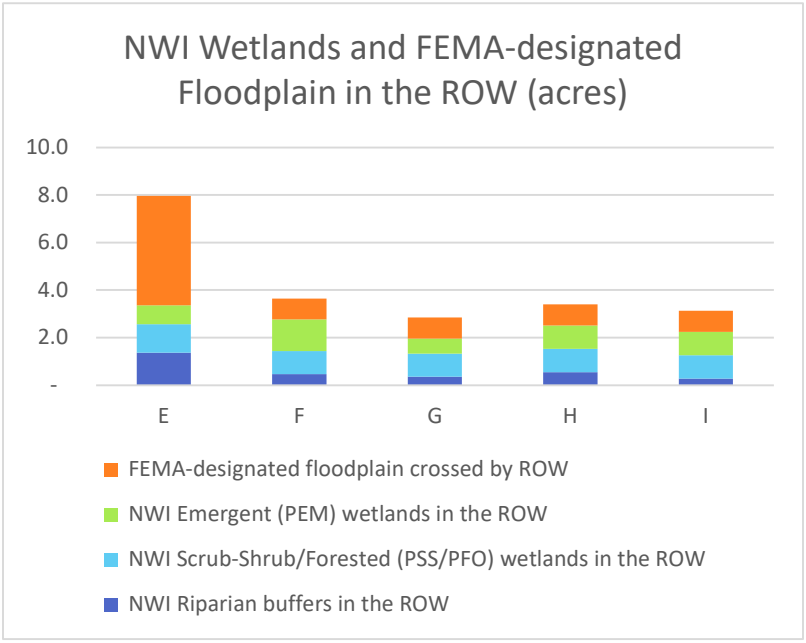
In most cases streams, wetlands, and floodplains can be spanned to minimize or avoid impacts; however, in some constrained areas, it is not possible to avoid all three. A comparative analysis of mapped hydrological data is standard to the siting process; however, in this case, the landowner-provided information regarding an unmapped flood area associated with Duncan Run was also considered. In addition to requiring the most NHD stream crossings and NWI riparian impacts, Alternative Route C crosses Duncan Run in an area where two other UNT converge, resulting in difficult structure placement and frequent flooding. Additionally, this stream crossing is surrounded by forested riparian corridors (1.4 acres of clearing required) and new residential development. In contrast, Alternative Routes A, B, and D cross Duncan Run to the southeast within an agricultural area and avoid these conflicts to water features. Overall, Alternative Route A is most favorable from a soil and water resources perspective since it requires the least NHD crossings and NWI riparian impacts.

Regardless of the selected route, field wetland delineations will be conducted to account for any un-inventoried wetlands and/or streams, in addition to confirming the actual acreage of any wetlands and/or streams crossed.

Vassell – Green Chapel: Alternative Route Comparison



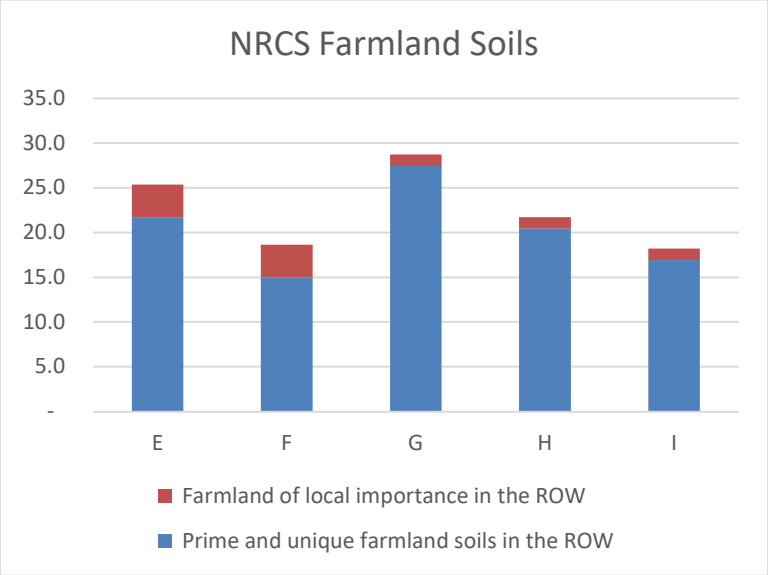
Any route selected will require multiple (between four and nine) NHD stream crossings since various named streams and UNTs are mapped between the project endpoints. Due to the overall nature of the Study Area and in efforts to minimize impacts to residential viewsheds, none of the Alternative Routes parallel existing transportation corridors for a significant portion of their alignments. This factor generally decreases the likelihood of crossing streams where existing culverts and impacts already exist. Any steam crossings from the Alternative Routes would likely be a new crossing, requiring the removal of tall growing riparian buffer vegetation. Vegetative clearing for stream crossings is minimal, but Alternative E has the most stream crossing and anticipated riparian buffer clearing.



As shown in **Table 2** and the chart opposite, each Alternative Route requires a similar amount of NWI PFO/PSS wetland crossings (approximately one acre) and therefore likely pose similar potential permanent wetland impacts. The Alternative Routes cross a wide range of NWI PEM wetlands (0.6 to 1.3 acres), but the

Company anticipates minimal temporary impacts to these resources as they can often be spanned.

Alternative Route E is the only route that approaches the Green Chapel Station from the west and notably has the most FEMA-designated 100-year floodplain areas in the ROW (approximately 5 acres), due to multiple crossings of Duncan Run. In contrast, Alternative Routes F through I approach Green Chapel Station from the east where less stream crossings are required, which significantly minimizes the 100-year floodplain crossings. Regardless, potential floodplain impacts, all impacts would generally be limited to the structure footprints and would likely not require extensive tree clearing activity due to the existing agricultural land use surrounding these areas.



Similar to the discussion above for Vassell – Curleys, the Alternative Routes evaluated for Vassell – Green Chapel share a similar range of predominantly hydric (66-99%) soils in the ROW and have no hydric (100%) soils in the ROW. Two types of NRCS farmland soils are crossed by each route: farmland soils of local importance and prime and unique farmland soils. The Alternative Routes cross between approximately 29 and 18 acres of these combined soil types, which is reflective of their primarily cross-country alignments that traverse cultivated cropland. Potential impacts to NRCS farmland soils are limited only to the proposed structure footprints; therefore, minimal impacts are anticipated.

5.1.2 Wildlife Habitat and Sensitive Species

Resource Characteristics

Agency coordination was initiated with ODNR and USFWS to inform them of the Project and request data to assist route planning. Responses were received by ODNR and USFWS on October 13, 2023, and September 11, 2023, respectively. Copies of agency correspondence letters for the Study Area are included in **Attachment C**.

Mammals

The ODNR and USFWS responses identified four protected bat species that are assumed to be present wherever suitable habitat occurs in Ohio, unless a presence/absence survey has been performed: the state and federal endangered Indiana bat (*Myotis sodalis*), the state endangered and federal threatened northern long-eared bat (*Myotis septentrionalis*), the state endangered little brown bat (*Myotis lucifugus*), and the state endangered tricolored bat (*Perimyotis subflavus*). Additionally, the ODNR indicated known records for northern long-eared bat south of Duncan Plains Road, which may be in the vicinity of Green Chapel Station.

To address potential adverse impacts to state and federal protected bat species known to occur in the State of Ohio, the ODNR and USFWS recommend that trees with greater than or equal to three inches diameter at breast height (dbh) be saved wherever possible, or if tree removal is unavoidable, to remove those trees between October 1 and March 31 to minimize direct take of individuals. The ODNR also recommends that a desktop habitat assessment is conducted, followed by a field assessment, if needed, to determine if a potential hibernaculum is present within a quarter-mile radius of the Project. The ODNR additionally states that since presence of state endangered bat species (northern long-eared bat) has been established in this area, summer tree cutting is not recommended, and additional summer surveys would not constitute presence/absence in the area.

The Company will coordinate with ODNR and USFWS for confirmed records of protected bat species within the Study Area and will follow seasonal tree clearing recommendations or conduct presence/absence surveys prior to clearing trees outside of the seasonal recommendations. Forest cover within the Study Area is generally limited to fragmented woodlots between agricultural, industrial, and residential properties.

The Company's consultant conducted a desktop habitat assessment for the Study Area, which identified no potential winter hibernacula (including caves, mines, or portals) within 0.25 mile of the Project. The Company conducted a desktop geological study, which

identified karst in the Study Area based on ODNR data. Additional geological investigations will be conducted for the proposed line routes to better characterize the site specific karst risk.

Mussels

The ODNR identified four protected mussel species with ranges crossing the project area: the federal endangered snuffbox (*Epioblasma triquetra*) and rayed bean (*Villosa fabalis*); the federally threatened rabbitsfoot (*Quadrula cylindrica cylindrica*); as well as the state threatened pondhorn (*Uniomerus tetralasmus*) and salamander mussel (*Simpsonaias ambigua*). The ODNR recommends that no in-water work occurs in perennial streams between March 15 and June 30 to reduce impacts to indigenous aquatic species and their habitat. No in-water work is proposed for the Project; therefore, the ODNR indicated that adverse impacts to the above-listed protected mussel species is not likely.

Raptors

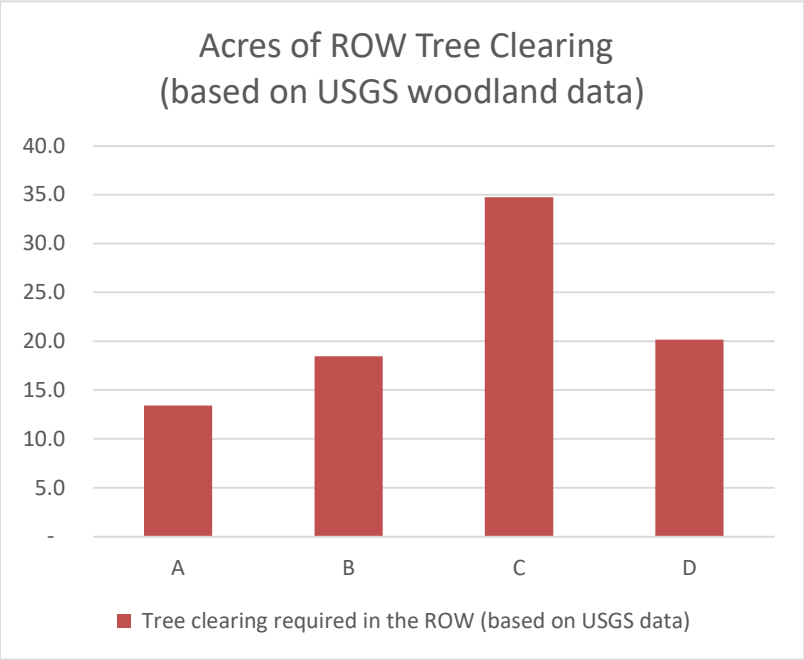
The ODNR also indicated that the Project is located within range of the state endangered northern harrier (*Circus cyaneus*). The northern harrier prefers open habitats and hunts over grasslands. Northern harriers are ground-nesting birds that typically build their nests on top of mounds in grassland and marshes. The ODNR advised that Project activities should only occur outside of the northern harrier's nesting period (April 15 to July 31) if suitable habitat is proposed for impact. During field inspections, if potentially suitable habitat for northern harrier is identified within the Proposed Route ROW based on the ODNR Northern Harrier Survey Protocol, efforts shall be made to minimize impacts to potential habitat and mitigate for impacts. No other state listed raptor species were identified by ODNR.

In their response, the ODNR Division of Wildlife (DOW) recommended implementing seasonal tree clearing; avoiding or minimizing impacts to streams, wetlands, and other water resources to the extent possible; and using BMPs to minimize erosion and sedimentation. Additionally, a review of the ODNR Natural Heritage Database revealed no historic records of state or federally listed species within a one-mile radius of the Project.

No known federal wilderness area, wildlife refuge, or critical habitat areas designated by the USFWS were identified in the Study Area. The potential for disturbances to vegetation and wildlife habitats can be generally assessed by comparing each Alternative Route with respect to the anticipated acreage of tree clearing. Outside of areas requiring tree clearing, permanent vegetation loss is limited to the transmission structure footprint, and construction of the Project would result in minimal permanent changes to habitat.

Where required by the USFWS and/or ODNR, the Company will complete species-specific field surveys and submit a survey report to the USFWS and/or ODNR. To minimize potential construction-related impacts to federal and state listed wildlife species, the Company will adhere to permit conditions imposing seasonal work restrictions based on sensitive life stages.

Vassell – Curleys: Alternative Route Comparison



Based on the responses received from ODNR and USFWS, the Alternative Routes were compared in terms of tree clearing in the ROW and grassland in the ROW to evaluate potential impacts to protected bat and raptor species with known occurrences and/or ranges in proximity to the Study Area. In general, the Siting Team was able to significantly reduce impacts to wildlife habitats and sensitive species by developing cross-country alignments through the predominant agricultural (cultivated cropland) landscape of the Study Area, where periodic disturbances occur.

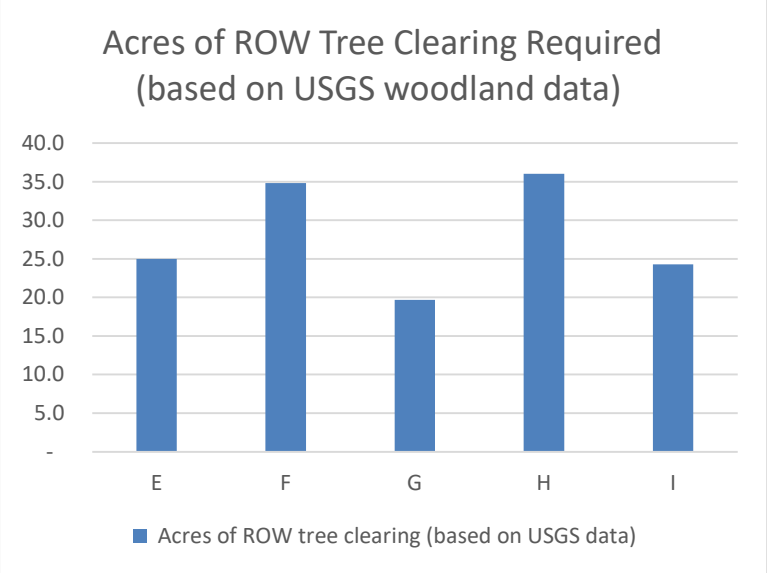
Alternative Route C poses the most potential impacts to state and/or federal protected bat habitat with its higher amount of ROW tree clearing requirements (approximately 35 acres), which is primarily attributed to the challenging Duncan Run crossing (see **Section 5.1.1**) and additional dense tree cover along the southern portion of its alignment that approaches Curleys Station from the west. In contrast, Alternative Routes A, B, and D approach Curleys Station from the east and avoid the Duncan Run crossing at Center Village Road, which effectively reduces the amount of tree clearing required in the ROW and potential impacts to state and/or federal protected bat habitat.

Based on the USGS National Land Cover Database ("NLCD"), no significant impacts to grassland habitats are likely and only Alternative Route C contains 0.2 acre of grasslands. Adverse impacts to the northern harrier are not anticipated; however, state agency consultation should be

initiated if pedestrian field surveys identify potential habitat patches along the Proposed Route, per the ODNR Northern Harrier Survey Protocol.

Vassell – Green Chapel: Alternative Route Comparison

A review of the Study Area generally shows more tree cover on the eastern and western portions, with more open agricultural land in the middle. Alternative Routes located near the middle of the Study Area (Alternative Routes E, G, and I) have notably less tree clearing required (25 acres or less). Additionally, Rattlesnake Creek has a large riparian buffer and is crossed by the eastern-most routes (Alternative Routes F and H).



A combination of these two factors results in Alternative Routes F and H requiring a larger amount of tree clearing and a higher potential to impact bat habitat. Further, reducing tree clearing increases the feasibility of clearing all trees between November 15 and March 31 when bat species are not roosting in trees. Regardless of route selected the Company will adhere to any requirements from the USFWS and will complete surveys, as necessary.

None of the Alternative Routes have significant grassland in the ROW (0.2 acres total); therefore, potential impacts to the northern harrier are not anticipated. Still, coordination with ODNR will occur if any potential habitat patches are identified (per the ODNR Norther Harrier Survey Protocol) during the pedestrian field surveys for the Proposed Route.

Table 1. Natural Resource Evaluation Criteria (Vassell – Curleys)					
Alternative Route	**Unit**	**A**	**B**	**C**	**D**
General					
Length	miles	13.1	12.9	11.9	12.9
150-foot ROW	acres	238.3	234.4	215.7	234.9
Water Resources					
Total NHD stream crossings	count	8	9	11	10
NWI Riparian buffers crossed by the ROW	acres	1.0	1.1	1.4	1.1
NWI Scrub-Shrub/Forested (PSS/PFO) wetlands in the ROW	acres	0.2	0.2	0.1	0.2
NWI Emergent (PEM) wetlands in the ROW	acres	0.6	0.6	0.6	0.6
FEMA-designated floodplain in the ROW	acres	1.2	2.0	0.8	2.0
Soil Resources					
Prime farmland in the ROW	acres	153.0	15.3	17.5	16.6
Predominately hydric soils (66 to 99%) in the ROW	acres	111.1	109.9	90.3	110.7
Wildlife and Habitat					
Tree clearing required in the ROW (based on USGS woodland data)	acres	13.4	18.4	34.7	20.2
Grassland habitat in the ROW (based on NLCD)	acres	0	0	0.2	0

Vassell – Curleys 345 kV Transmission Line - Natural Resources Summary:

Alternative Route A has the potential to impact natural resources the least overall:

- Alternative Route A minimizes NHD stream crossings and NWI riparian buffers in the ROW.
- Alternative Route A minimizes FEMA-designated floodplain in the ROW and additionally avoids unmapped known flood-prone areas associated with Duncan Run.
- Alternative Route A requires the least amount of ROW tree clearing, thereby minimizing potential impacts to threatened and endangered bat species.

Alternative Route C has the potential to impact natural resources the most overall:

- Alternative Route C requires the most NHD stream crossings and NWI riparian buffers in the ROW.
- Even though Alternative Route C crosses the least amount of FEMA-designated floodplain in the ROW, there are substantial unmapped flooding concerns identified where it crosses Center Village Road and Duncan Run.
- Alternative Route C requires the most ROW tree clearing and poses greater risks for potential impacts to threatened and endangered species.

Table 2. Natural Resources (Vassell – Green Chapel)						
Alternative Route	**Unit**	**E**	**F**	**G**	**H**	**I**
General						
Length	miles	12.3	13.3	12.6	13.1	12.8
150-foot ROW	acres	224.3	242.1	229.0	237.9	233.7
Water Resources						
Total NHD stream crossings	count	9	5	5	6	4
NWI Riparian buffers crossed	acres	1.4	0.5	0.4	0.5	0.3
NWI Scrub-Shrub and Forested (PSS/PFO) wetlands crossed	acres	1.2	1.0	1.0	1.0	1.0
NWI Emergent (PEM) wetlands crossed	acres	0.8	1.3	0.6	1.0	1.0
FEMA-designated floodplain crossed	acres	4.6	0.9	0.9	0.9	0.9
Soil Resources						
Prime farmland soils in the ROW	acres	21.7	15.0	27.4	20.5	16.9
Farmland of local importance in the ROW	acres	3.7	3.7	1.3	1.3	1.3
Predominately hydric soils (66 to 99%) in the ROW	acres	100.0	95.5	90.1	104.2	97.4
Wildlife and Habitat						
Tree clearing required in the ROW (based on USGS woodland data)	acres	25.0	34.8	19.7	36.0	24.3
Grassland habitat in the ROW (based on NLCD)	acres	0.2	0.2	0.2	0.2	0.2

Vassell – Green Chapel 345 kV Transmission Line - Natural Resources Summary:

Alternative Route G has the potential to impact natural resources the least overall:

- Alternative Route G is favorable for NHD stream crossings and NWI riparian buffers in the ROW.
- Alternative Route G minimizes NWI wetlands (PFO/PSS and PEM) in the ROW to the best extent practicable and additionally minimizes FEMA-designated floodplain in the ROW.
- Alternative Route G requires the least amount of ROW tree clearing, thereby minimizing potential impacts to threatened and endangered bat species.

Alternative Route E has the potential to impact natural resources the most overall:

- Alternative Route E requires the most NHD stream crossings and crosses the most NWI riparian buffers, NWI PSS/PFO wetlands, and FEMA-designated floodplains.

From solely a wildlife habitat perspective, **Alternative Route H** is the **least favorable**, since it requires the most ROW tree clearing.

5.2 Human Environment

Land use impacts include direct and indirect impacts to residential, commercial, and industrial development, as well as institutional uses (e.g., schools, places of worship, cemeteries, and hospitals), recreational areas, and cultural resources. Potential impacts discussed in this section are based on publicly available maps and data. Detailed land use characteristics surrounding the Alternative Routes are described in **Section 5.2.1** through **Section 5.2.5**.

The human environment considerations for the Vassell – Curleys 345 kV Transmission Line are presented in **Table 3** and shown on **Map 6a**. Similarly, the human environment comparison and considerations for the Vassell – Green Chapel 345 kV Transmission Line are provided in **Table 4** and identified on **Map 6b**. Both maps are compiled in **Attachment A**.

5.2.1 Existing and Proposed Developed Land Use

Human environment impacts may include direct and indirect impacts to residential, commercial, and industrial development, institutional uses (e.g., schools, places of worship, cemeteries, and hospitals), cultural resources, and land use. Construction of a new transmission line can result in changes in land use and aesthetic impacts to residents, commuters and travelers, employees, and recreational users. An overall Siting Study goal is to avoid or minimize conflicts with existing and proposed land uses that are not compatible with a new transmission line.

Resource Characteristics

The Study Area is located in Berkshire, Trenton, and Harlem Townships, Delaware County; Plain Township, Franklin County; and Monroe and Jersey Townships, Licking County. More specifically, approximately 55% of the Study Area is in Delaware County, while the remaining 45% is primarily in Licking County, and only a nominal amount (< 1%) in Franklin County. The United States EPA ("USEPA") Environmental Justice Screening and Mapping Tool indicates that the entire Study Area falls within the 13th percentile for the State Demographic Index and no environmental justice communities were identified in the project area.

As shown on **Map 6a and 6b, Attachment A**, agricultural (cultivated cropland) land use comprises most of the Study Area's existing landscape. Residential development is another prominent land use present in the Study Area, with pocket subdivisions and single-family residences occurring along local county or township roads, with a high concentration along State Route 37 and Center Village Road/Duncan Plains Road, which both cross diagonally through the Study Area. Proposed development is expected to occur along the eastern edge of the Study Area near the Village of Johnstown. Additionally, parcels near the southern portion of the Study Area have been acquired by the NACo for future mixed-use commercial/industrial development.

Mixed-use commercial/industrial development is generally concentrated in the southeastern portion of the Study Area, north of New Albany and west of Johnstown. Places of Worship within the Study Area include Jersey Chapel, located approximately 150 feet south of the US-62 and Tippet Road intersection, and Miller Church, 155 feet west of Millers Church Road and 145 feet north of US-62. Hunt Cemetery and Wickhieser Cemetery are both centrally located in the Study Area along the intersection of Center Village Road and Green-Cook Road. Two additional cemeteries are in the southern portion of the Study Area, closer to the Village of Johnstown and the City of New Albany. The USGS PADUS identifies the Clover Valley Golf Club, a private recreational area, located along the eastern boundary of the Study Area, east of Raccoon Creek and along OH-37. No other recreational areas, local parks, hospitals, national landmarks, or schools were identified within the Study Area.

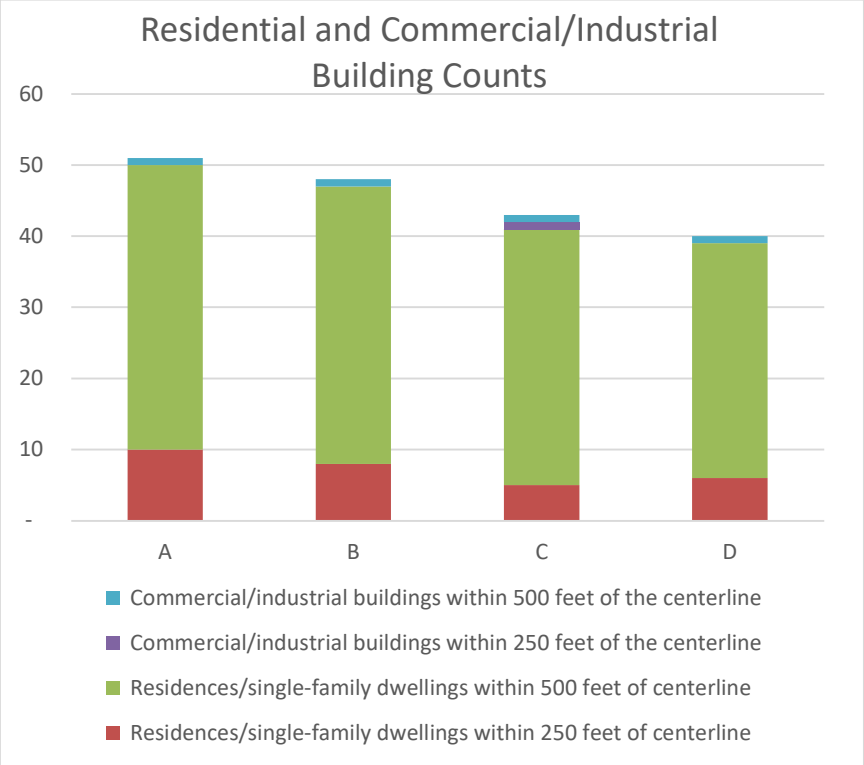
Four FCC communication towers were identified in the Study Area. Two FCC communication towers are present in central portion, with one located about 0.4 mile southeast of Woodtown Road and OH-605, and the other located approximately 0.3 mile southeast of OH-37 and County Line Road. Two additional FCC towers are located within the southern portion of the Study Area: one is distanced approximately 0.2 mile east of US-62 and Duncan Plains Road, while the other is located 0.3 mile northeast of the proposed Curleys Station.

Company-owned existing transmission lines parallel the north, west, and south portions of the Study Area; however, no existing lines directly connect the project endpoints. Additionally, review of aerial photography and site visits determined that significant residential and recreational development has occurred on either side of the existing rights-of-way, which makes a parallel alignment difficult without significant impacts. Where possible, portions of these existing, Company-owned transmission lines were identified as potential siting opportunities during the conceptual route process of the Project (see **Section 3.4**).

The Study Area is bisected by two interstate pipelines: a Columbia gas pipeline (traveling northwest to southeast) and the Marathon Health-Findlay Pipeline (traveling southwest to northeast). Additionally, a private FAA airstrip, the Warped Wing Airstrip, is located on a property along Edwards Road between County Line Road and Clover Valley Road. No additional private or public FAA facilities were identified within the Study Area. Additionally, no active or abandoned mines, quarries, or railroads were identified within the Study Area.

Vassell – Curleys: Alternative Route Comparison

Land uses along the routes were identified based on a desktop review of aerial imagery, field reconnaissance, the USGS NLCD, and county parcel data. The Siting Team developed Alternative Routes that attempt to maximize the distance from dwellings to the extent possible and avoid potential ROW encroachments. However, given the development within the Study Area, being completely away from dwellings was not possible. Identifying locations for suitable crossings of major residential roadways in order to minimize impacts to dwellings was a high priority. Finding suitable crossing locations of Duncan Plains Road/Center Village Road, Trenton Road, Green Crook Road, and OH-605 proved to be the most challenging for this part of the Project.



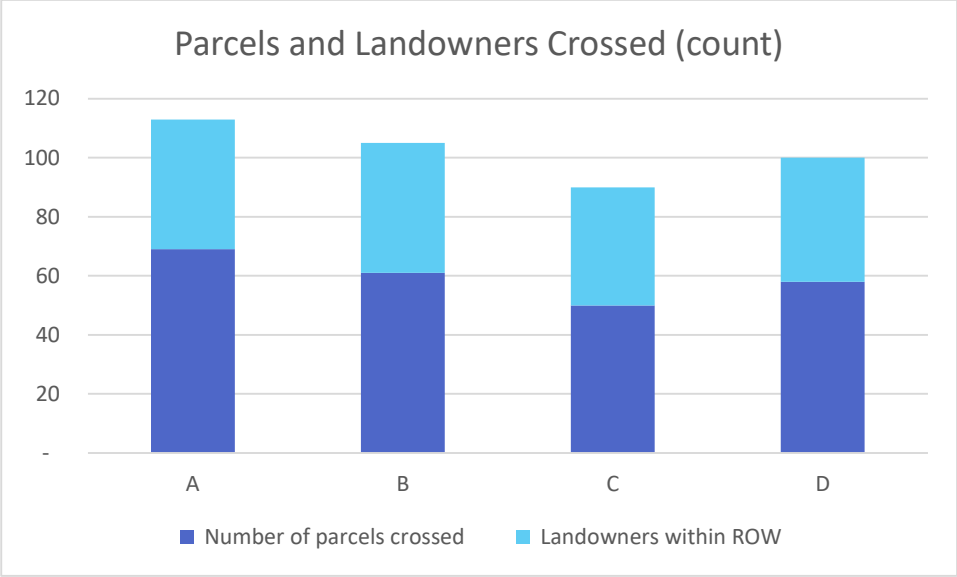
Overall, the Alternative Routes effectively minimize the number of residences within 250 feet of their alignments, ranging from 5 to 10. Alternative Routes A and B cross the most local roads, where residences are located and as a result, these Alternative Routes have higher counts of residences within 250 and 500 feet of their proposed alignments.

Alternative Route D is largely cross-country and farther from developed residential clusters and crosses Duncan Plains Road in a much less developed location. As such, Alternative Route D has the fewest overall residential structures within 500 feet (33). Although Alternative Route C has a similarly favorable overall residential count when compared to Alternative Route D, Alternative Route C crosses a residential pinch-point near Duncan Plains Road and Center Village Road; a crossing that poses challenges to the overall Project.

Within the southern portion of the Study Area, a small number of commercial/industrial properties were identified near the proposed Curleys Station location. Each Alternative Route is located within 500 feet of at least one commercial/industrial building as they approach the endpoint. Commercial/industrial land use is anticipated to expand within this region of the Study

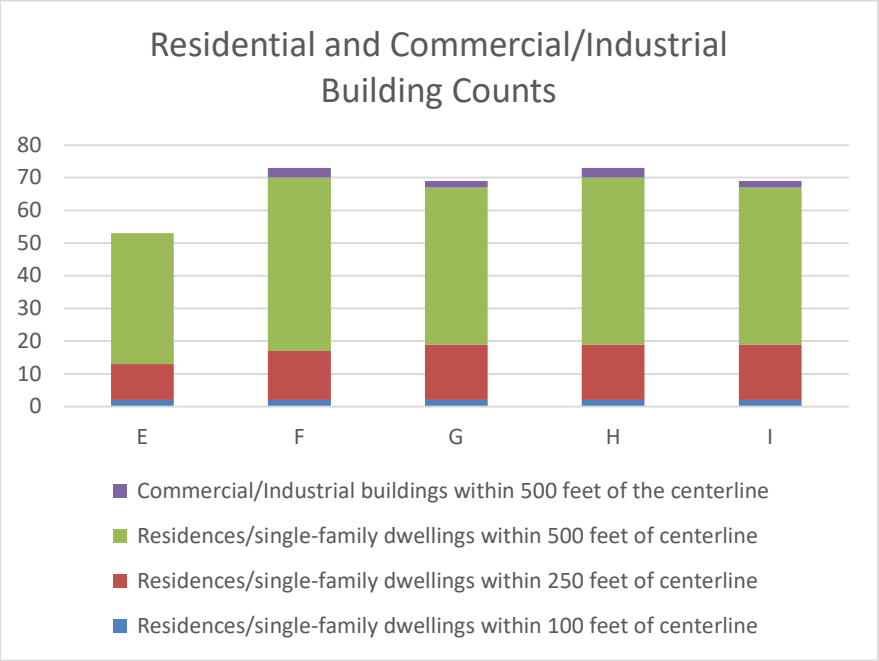
Area; therefore, proximity to existing commercial properties is not a primary concern for identifying a Proposed Route.

Another primary differentiator amongst the Alternative Routes is the number of parcels and landowners crossed by the proposed ROW. Minimizing overall length often results in fewer parcels crossed. Alternative Route C is the shortest route and has the least parcels and landowners within the ROW. By contrast, Alternative Route A, which is the longest Alternative Route crosses the most parcels (69) and landowners (44 and the same al Alternative B). These combined factors for Alternative Routes A and B are also correlated to their higher residential building counts within 500 feet, as described above. Alternative Route D represents a balance of these two factors. While it is slightly longer, to avoid the difficult crossing of Center Village Road, it still has the fewest residents within 500 feet and only has two more landowner crossings compared to Alternative C.



Vassell – Green Chapel: Alternative Route Comparison

Residential development across the Study Area is relatively low density. The primary existing land use is agricultural (i.e., cropland and pastures), and residences are scattered throughout the Study Area with concentrations along local roads. Land use is similar for each of the Alternative Routes since they primarily traverse a mix of undeveloped forest and agricultural land, which aids in minimizing the total number of residential and commercial/industrial buildings within 250 and 500 feet of the centerlines.



Alternative Route E has the fewest residential and commercial buildings in proximity to other Alternative Routes considered (**Table 4** below and the chart above). Alternative Route E avoids concentrations of developed areas along the eastern portion of the Study Area, specifically clusters along OH-37 and along Duncan Plains Road in closer proximity to the Village of Johnstown. The remaining Alternative Routes (F, G, H, and I) are all longer and less direct than Alternative Route E, crossing more residential development clusters, particularly as they approach the Green Chapel Station from the east near Johnstown.

Each Alternative Route has three outbuildings and one residence in their proposed ROW; however, these structures are located on property that has already been purchased by NACo and are planned for demolition. All structures will be removed before construction of the Project.

As shown in **Table 4** below and the chart below, Alternative Routes E also crosses the least number of parcels (69) and landowners (46) with the ROW. These factors are reflective of Alternative Route E having the shortest alignment and avoiding dense developed land use areas outside of Johnstown. In contrast, Alternative Route F (the longest and least direct route) would impact the most parcels (81) and landowners (61).

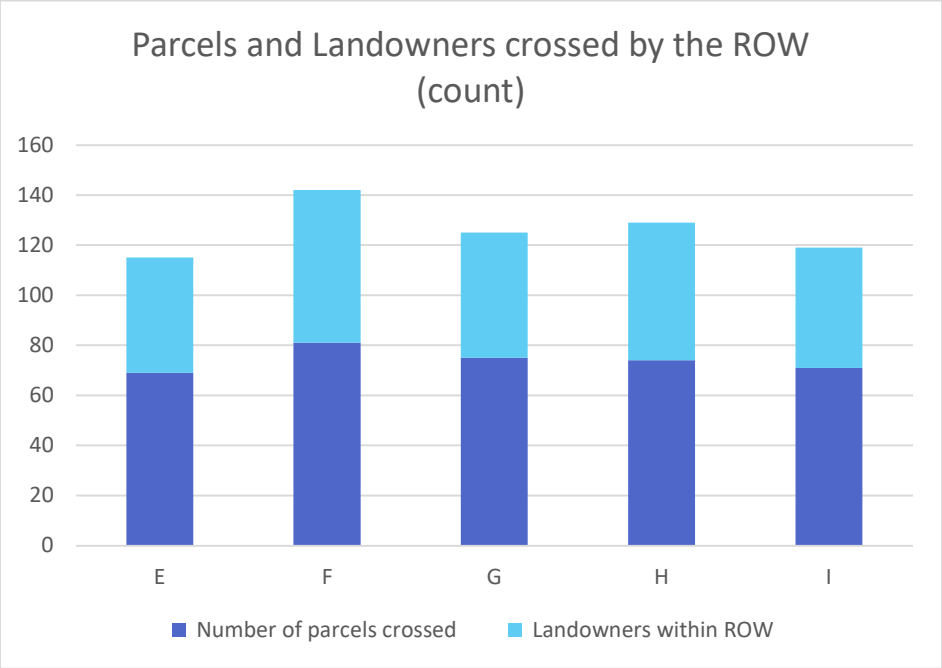

Parcels and Landowners crossed by the ROW (count)
160
140
120
100
80
60
40
20
0
E
F
G
H
I
Number of parcels crossed
Landowners within ROW

Table 3. Land Use Evaluation Criteria (Vassell – Curleys)					
Alternative Route	**Unit**	**A**	**B**	**C**	**D**
General					
Length	miles	13.1	12.9	11.9	12.9
Number of parcels[5] crossed	count	69	61	50	58
Landowners within ROW	count	44	44	40	42
Residential					
Residences/ single-family dwellings within 250 feet of centerline	count	10	8	5	6
Residences/ single-family dwellings within 500 feet of centerline	count	40	39	36	33
No outbuildings, shed, garages, or silos in the ROW. No residences within the ROW or 100 feet of centerline.					
Commercial/Industrial					
Businesses/ commercial buildings within 250 feet of the centerline	count	0	0	1	0
Businesses/ commercial buildings within 500 feet of the centerline	count	1	1	1	1
Agricultural					
Pasture/ rangeland crossed within 1,000 feet (based on NLCD data)	percent	9.5%	8%	7.4%	6.7%
Cropland crossed within 1,000 feet (based on NLCD data)	percent	78.8%	78.5%	72.3%	79%
Community/Recreational Facilities					
Golf courses within 1,000 feet of centerline	count	0	0	0	0
No schools or hospitals located within the Study Area. No parks or recreational areas within 1,000 feet of the centerline. The Clover Valley Golf Club is located within the Study Area, but not within 1,000 feet of the Vassell – Curleys routes.					
Cultural Resources					
Known* archaeological sites within the ROW	count	6	6	5	6
Known archaeological sites within 250 feet of the centerline	count	12	12	10	11
Known archaeological sites within 0.25 mile of the centerline	count	77	79	76	77
Known archaeological sites within 1 mile of the centerline	count	164	164	169	164
Known architectural resources within 1 mile of the centerline	count	11	10	10	10
OGS Cemeteries within 1 mile of the centerline	count	6	6	5	6
NRHP-Listed sites within 1 mile of the centerline	count	1	0	0	0
NRHP-eligible sites within 1 mile of the centerline	count	1	1	1	1

[5] The number of parcels crossed refers to the number of individual plots of owned land recorded by each County. The number of landowners within the ROW represent the number of individual landowners, who each may own one or more parcels.

Table 3. Land Use Evaluation Criteria (Vassell – Curleys)					
Alternative Route	**Unit**	**A**	**B**	**C**	**D**
No architectural resources within the ROW or within 250 feet of centerline. No architectural resources within 0.25 mile of centerline.					

*Known architectural and archaeological resources do not have a designated status and therefore could not be dismissed at this time, as potentially NRHP-eligible.

Vassell – Curleys 345 kV Transmission Line – Human Environment Summary:

Alternative Route D has the potential to impact the human environment the least overall:

- Alternative Route D minimizes impacts to nearby residential viewsheds to the best extent practicable by having the least number of residences within 500 feet of the centerline.
- Additionally, Alternative Route D is favorable for the total number of parcels and landowners in the ROW.

Alternative Route A has the potential to impact the human environment the most overall:

- Alternative Route A is the longest, most circuitous route with the highest number of residences within 250 and 500 feet of the centerline.
- Alternative Route A crosses the most parcels and landowners in the ROW.

Table 4. Land Use Evaluation Criteria (Vassell – Green Chapel)						
Alternative Route	**Unit**	**E**	**F**	**G**	**H**	**I**
General						
Length	miles	12.3	13.3	12.6	13.1	12.8
Number of parcels[6] crossed	count	69	81	75	74	71
Landowners within ROW	count	46	61	50	55	48
Residential						
Outbuildings, sheds, garages, or silos in the ROW [a]	count	3	3	3	3	3
Residences/ single-family dwellings within the ROW [a]	count	1	1	1	1	1
Residences/ single-family dwellings within 100 feet of centerline	count	2	2	2	2	2
Residences/ single-family dwellings within 250 feet of centerline	count	11	15	17	17	17
Residences/ single-family dwellings within 500 feet of centerline	count	40	53	48	51	48
Commercial/Industrial						
Businesses/ commercial buildings within 500 feet of the centerline	count	0	3	2	3	2
No businesses/commercial buildings in the ROW or within 250 feet of centerline.						
Agricultural						
Pasture/ rangeland crossed within 1,000 feet (based on NLCD data)	percent	13.6%	13.1%	13.3%	12.2%	14.7%
Cropland crossed within 1,000 feet (based on NLCD data)	percent	70.5%	67.2%	71.0%	67.5%	69.1%
Community/Recreational Facilities						
Golf courses within 1,000 feet of centerline	count	0	1	0	0	0
No schools, hospitals, or parks located within the Study Area or within 1,000 feet of the centerline.						
Cultural Resources						
Known [b] archaeological sites within the ROW	count	5	5	5	5	5
Known archaeological sites within 250 feet of the centerline	count	12	12	12	12	12
Known archaeological sites within 0.25 mile of the centerline	count	72	70	70	70	70
Known archaeological sites within 1 mile of the centerline	count	191	214	191	214	191

[6] The number of parcels crossed refers to the number of individual plots of owned land recorded by each county. The number of landowners within the ROW represent the number of individual landowners, who each may own one or more parcels.

Table 4. Land Use Evaluation Criteria (Vassell – Green Chapel)						
Alternative Route	**Unit**	**E**	**F**	**G**	**H**	**I**
Known architectural resources within 0.25 mile of the centerline	count	1	1	1	1	1
Known architectural resources within 1 mile of the centerline	count	29	29	29	29	29
OGS Cemeteries within 1 mile of the centerline	count	6	5	6	5	6
NRHP-Listed sites within 1 mile of the centerline	count	1	1	1	1	1
NRHP-eligible sites within 1 mile of the centerline	count	1	1	1	1	1
No architectural resources within the ROW or within 250 feet of centerline.						

a - Residences/outbuildings within the proposed ROW of Vassell – Green Chapel Alternative Routes are located on NACo-owned property and are planned for demolition.
b - Known architectural and archaeological resources do not have a designated status and therefore could not be dismissed at this time, as potentially NRHP-eligible.

Vassell – Green Chapel 345 kV Transmission Line – Human Environment Summary:

Alternative Route E has the potential to impact the human environment the least overall:

- Alternative Route E minimizes impacts to nearby residential viewsheds to the best extent practicable by having the least number of residences within 250 and 500 feet of the centerline.
- Additionally, Alternative Route E has the least number of parcels and landowners in the ROW.

Alternative Route F has the potential to impact the human environment the most overall:

- Alternative Route F is the longest, most circuitous route with the highest number of residences within 250 and 500 feet of the centerline.
- Alternative Route F crosses the most parcels and landowners in the ROW.

5.2.2 Agricultural and Forestry Resources

Temporary impacts to agricultural land may occur during construction. However, permanent impacts to agricultural land will be limited to the foundations of the monopole structures and agricultural production can continue after the new 345 kV transmission line is operational. Therefore, existing agricultural land use is regarded as compatible land use, especially to avoid the dense pockets of residential and commercial/industrial development throughout the Study Area. The Siting Team attempted to minimize impacts to cultivated croplands by following property boundaries and natural field breaks to the highest extent practicable. Based on these efforts and subsequent efforts to mitigate impacts on farmed properties during ROW negotiations, AEP anticipates that agricultural land use impacts will generally be limited and similar across each Alternative Route.

In addition to ecological concerns (see **Section 5.1.2**), crossing large amounts of forested land can result in socioeconomic impacts to the surrounding community in relation to logging practices, if present. After construction of the new 345 kV transmission lines no tall growing woody vegetation will be allowed to grow within the ROW and will be permanently removed.

Resource Characteristics

Agriculture, specifically cultivated cropland, is the Study Area's dominant existing land use (see **Map 6a and 6b, Attachment A**). Additional agricultural operations occur throughout the Study Area, such as livestock grazing and animal husbandry, as indicated by landowners during the public and stakeholder input process of the Project. No CPI systems were identified within the Study Area based on a desktop review of current aerial imagery and subsequent field reconnaissance. A desktop review of the National Conservation Easement Database (NCED) indicated no federal conservation areas or agricultural security areas within the Study Area; however, a state (ODA) agricultural easement is located approximately 0.4 mile east of the intersection of Duncan Plains Road and Edwards Road.

Forestry resources within the Study Area are generally limited to the fragmented woodlots and forested fencerows scattered throughout residential and agricultural properties in the Study Area. According to publicly accessible data, none of the forested areas consists of federal or state forested lands, as most appear to be forested tracts used for screening purposes between agricultural and residential properties.

Alternative Route Comparison

As shown in **Table 3 and 4**, the Alternative Routes developed for both portions of the Project cross agricultural land (cropland or pasture/hayfield) for the majority of their alignments. The Siting Team identified agricultural land use as a compatible land use in the absence of other

suitable linear infrastructure paralleling opportunities early on in the siting process. Traversing large agricultural tracts effectively minimizes impacts to the overall residential viewshed, as homes are often located along roadways. Minimal vegetation clearing is required in agricultural areas and permanent impacts would be limited to the foundations of the monopole structures. Access to these agricultural areas is adequate, as all four Alternative Routes are in proximity to local roads and/or field drives, and their alignments primarily parallel agricultural property boundaries. Furthermore, the terrain is flat, reducing complications related to access road construction and the access road can often be co-located in the ROW. Design and engineering efforts will be made to reduce impacts to the agricultural fields by reducing the number of heavy angle structures, increasing span lengths, and placing fewer structures in farm fields.

There are no large, contiguous forested areas in the Study Area. Forested areas crossed by the Alternative Routes are fragmented woodlots used for screening purposes between properties or riparian buffers adjacent to streams. Alternative Routes C, F, and H have higher amounts of tree clearing within the ROW, mostly in proximity to streams. Although Alternative Route C is the shortest and most direct route evaluated for the Vassell – Curleys 345 kV Transmission Line, it crosses Duncan Run in a challenging location, where it has dense forested riparian buffers, and continues to cross additional forested areas as it approaches Curleys Station from the west. Alternative Routes F and H are the two longest and least direct routes evaluated for the Vassell – Green Chapel 345 kV Transmission Line and are the only two alternative routes to cross South Rattlesnake Creek within the northeastern portion of the Study Area where it is surrounded by dense forested riparian buffers.

5.2.3 Aesthetic Impacts and Recreation and Conservation Lands

Regardless of the route chosen, constructing a new greenfield overhead transmission line adjacent to residences and recreational resources that do not currently have a view of an electrical line will result in new aesthetic impacts. Both proposed transmission lines will be supported on new BOLD structures with an average height of 135 feet above ground level. The BOLD design is advantageous compared to a traditional 345 kV design, which requires taller structures. Much of the Study Area is relatively flat. Existing topography and the relative location of a transmission line can affect the scenic integrity of the Project area.

Scenic integrity refers to the degree of intactness and wholeness of the landscape character. Routes that use or parallel existing high-voltage transmission lines, major roads/highways, or railroad corridors would generally result in fewer land use or aesthetic impacts than those that parallel local roads or require greenfield ROW; however, suitable existing transmission and transportation corridor paralleling opportunities are limited between the project endpoints and significant residential development was observed adjacent to existing transmission lines in the Study Area. Given these factors, the Siting Team ultimately focused on placing routes away from

residential and recreational areas by crossing or paralleling larger tracts of land rather than paralleling local roads, to protect scenic integrity of the project area to the best extent feasible.

Resource Characteristics

The Study Area contains minimal recreational areas and conservation lands. The Siting Team identified two parcels within the Study Area, located 0.4 mile east of the intersection of Center Village Road and Edwards Road as one agricultural conservation easement managed by the ODA. One private golf course, the Clover Valley Golf Club, is on the eastern boundary of the Study Area, while three additional golf courses (Kyber Run Golf Course, Rattlesnake Ridge Golf Club, and Royal American Links) are located in general proximity to the Study Area. No other private, state, or federal land was identified within the Study Area.

Alternative Route Comparison

Due to minor modifications made during the study segment evaluation and refinement process (see **Section 3.7**), none of the Alternative Routes cross the ODA conservation easement located along Edwards Road. No other conservation lands were identified within the Study Area or within one mile of the Alternative Routes for either portion of the Project.

Alternative Route F is across the street from the entrance and parking area for the Clover Valley Golf Club; therefore, Alternative Route F would likely be visible in the parking lot and entrance to the Clover Valley Golf Club but is not expected to be visible once using the golf course. The golf course has vegetative screening around the course, shielding views of Alternative Route H from recreational users. Additionally, the structure design (BOLD) chosen for the Project, as described in **Section 1.2**, is a lower profile structure type when compared to traditional 345 kV structures.

5.2.4 Historic and Archaeological Resources

Resource Characteristics

Cultural resources generally refer to historic and prehistoric archaeological resources and historic architectural resources. Initial analysis of the Project's potential to affect cultural resources involved a review of data provided by Ohio State Historic Preservation Office (SHPO). Known architectural resource areas (i.e., historic buildings, structures, districts, and roads) in the vicinity of the Alternative Routes are shown on **Maps 7a and 7b, Attachment A**. Specific locations of the known archaeological resources are not shown on the figures in this study to protect any such sites.

Initial analysis of the Project's potential to affect cultural resources involved a review of data provided by Ohio SHPO and the National Register of Historical Places (NRHP). There are no known

cultural resources in the middle of the Study Area and all resources are limited to areas north (near Vassell), east (near Johnstown), and south (near New Albany) of Alternative Routes.

There are no NRHP-eligible sites listed within the Study Area. Ohio SHPO identified one building listed on the National Register of Historic Places, the Center Inn, located outside the northern boundary of the Study Area and located at least 0.5 mile north of all Alternative Routes. No impacts are anticipated for the resource because of the Project.

As shown in **Maps 7a and 7b**, many previously documented architectural resources are located in the vicinity of the proposed Green Chapel Substation, which were identified during investigations required for recent and/or ongoing industrial development within the greater New Albany area. As stated above, none of these architectural resources are included in the NRHP or are listed as NRHP-eligible. Potential effects on the known architectural resources would likely be primarily visual resulting from the construction of new structures and transmission line. The visual landscape change would vary based on local topography, height of existing vegetation, current infrastructure, and any intervening recent development. Still, subsequent visual impacts are not anticipated in this area since the construction of the industrial properties continues in the immediate proximity to the architectural resources.

There are seven cemeteries located within the Study Area, all of which are classified as OGS, historic cemeteries. Four of these seven historic cemeteries, the Tuller, Hanover, Hunt, and Wickheiser cemeteries, also have a modern-day use. The Tuller Cemetery is within the southeastern portion of the Study Area, located at the intersection of Clover Valley Road and US-62 and is identified as a historic (OGS) cemetery. Additionally, the Hanover Cemetery located just south of Fancher Road and 0.2-mile east of Green Cook Road and is identified as another historic cemetery. Both the Hunt and Wickheiser Cemeteries near the intersection of Center Village Road and Montgomery Road are also considered historic cemeteries. Three additional OGS historic cemeteries are located within the Study Area but are not affiliated with modern use.

A total of 214 known archaeological resources were identified within one mile of the Alternative Routes for both Vassell – Curleys and Vassell – Green Chapel. Buried and above ground archaeological resources are not typically impacted by electric transmission lines as the poles can be sited to avoid specific sites, and the impact from structure footprints is small. Significant archeological resources identified in the transmission line corridor, on access roads, or in work areas will be avoided by spanning/avoiding the resource. Once final routes are selected, the Company's consultant will complete Phase I Archaeological and Phase I History/Architectural surveys, which involves subsurface testing and visual inspection for the Project and correspondence with Ohio SHPO regarding potential impacts, if determined likely.

Vassell – Curleys: Alternative Route Comparison

Historic Aboveground Resources

As shown above in **Table 3**, the Alternative Routes are similar regarding proximity to aboveground resources. All Alternative Routes have one NRHP-eligible site, the Angeline Murphy House, within one mile, and Alternative Route A has one NRHP-listed site, the Center Inn, within one mile. While there are no architectural resources within 0.25-mile, Alternative Route A contains 11 known architectural resources within one mile where the rest of the Alternative Routes only have 10. Given the distance from these resources, visual impacts to these resources from the construction of a transmission line is not expected.

Historic Underground Resources

There are five or six historic cemeteries located within a mile of all Alternative Routes. Alternative Route C has only five OGS cemeteries within one mile, while Alternatives Routes A, B, and D each have six OGS cemeteries within one mile. None of the Alternative Routes has cemeteries within its proposed ROW or within 100 feet of its alignment. Overall, because the Alternative Routes are located far from cemeteries, the Siting Team does not anticipate ground disturbance or impacts to these resources.

Each of the Alternative Routes have either seven or eight archaeological sites within their proposed 150-foot-wide ROW with unknown NRHP-eligibility status. A more focused list of archaeological resources within 250 feet of the alternative routes is shown below in **Table 5**; none of which have been evaluated for eligibility for the NRHP and their significance is unknown**.** It is important to note that a significant portion of over archaeological sites in the area and within 1 mile of the centerlines have already been disturbed by existing development, and no adverse impacts are expected for these resources. Alternative Route C has seven archaeological sites within the ROW; however, each of these sites are within a region already disturbed by existing development and/or is located away from angled structures. No adverse impact is anticipated for the additional archaeological site within the proposed ROW for Alternative Routes A, B, and D, as it is also located away from angled structures.

Table 5. Distances (in feet) of Archaeological Resources within 250 Feet (Vassell – Curleys)					
Resource No.	**Route A**	**Route B**	**Route C**	**Route D**	**NRHP Status**
DL2603*	173	173	173	173	Unknown
DL2616*	104	104	104	104	Unknown
DL2618	0	0	0	0	Unknown
DL2619	0	0	0	0	Unknown
DL2620	0	0	0	0	Unknown
DL2629	0	0	0	0	Unknown
DL2632	139	139	139	139	Unknown
DL2677	0	0	0	0	Unknown
DL2691	136	136	136	136	Unknown
DL2712*	55	55	55	55	Unknown
DL2713*	149	149	149	149	Unknown
DL2714*	0	0	0	0	Unknown
DL3024	0	0	> 250 ft	0	Unknown
DL3027	168	168	> 250 ft	> 250 ft	Unknown

NOTE: Bolded resource numbers indicate a resource within the proposed ROW and have distances ranging from 0 feet to 75 feet.
*indicates an archaeological resource located within an area already disturbed by previous construction of the Vassell Station.

Vassell – Green Chapel: Alternative Route Comparison

Historic Aboveground Resources

As shown above in **Table 4**, the Alternative Routes show similarly overall for most cultural resources counts. Similar to the Alternative Routes for Vassell – Curleys, all Alternative Routes for Vassell – Green Chapel have one NRHP-eligible site, the Angeline Murphy House and one NRHP-listed site, the Center Inn, within one mile. All Alternative Routes have one architectural resource within 0.25-mile, and each Alternative Route also has 29 architectural resources within a one-mile radius. Given that the Alternative Routes are located far away from these resources, the Siting Team does not anticipate any visual impact from the Project.

Historic Underground Resources

Within one mile of their proposed alignments, the Alternative Routes encounter either five or six historic (OGS) cemeteries, but none of the Alternative Routes has a cemetery located within its proposed ROW or within 500 feet. Similar to the cemeteries noted above for Vassell – Curleys, the Siting Team does not anticipate ground disturbance or impacts to these resources for Vassell – Green Chapel given their distance from the Alternative Routes.

Each of the Alternative Routes has five archaeological sites within the 150-foot ROW, and each of the Alternative Routes has 12 archaeological sites within 250 feet**;** none of which have been evaluated for eligibility for the NRHP and their significance is unknown. As shown in **Table 4** above and the chart below, A more focused list of distances from archaeological resources within 250 feet of the alternative routes in shown below in **Table 6.** It is important to note that a significant portion of the archaeological sites included in these calculations and within one mile of the centerlines have already been disturbed by existing development, and no adverse impact is expected for these resources. Each of the archaeological sites located within the 150-foot-wide ROW proposed for the Alternative Routes is either within this region already disturbed by existing development or is located away from an angled structure; therefore, no adverse impacts are anticipated for the known archaeological sites within the Study Area.

Table 6. Distances (in feet) of Archaeological Resources within 250 Feet (Vassell – Green Chapel)						
Resource No.	**Route E**	**Route F**	**Route G**	**Route H**	**Route I**	**NRHP Status**
DL2603*	173	173	173	173	173	Unknown
DL2616*	104	104	104	104	104	Unknown
DL2618	0	0	0	0	0	Unknown
DL2619	0	0	0	0	0	Unknown
DL2620	102	102	102	102	102	Unknown
DL2629	202	202	202	202	202	Unknown
DL2630	0	0	0	0	0	Unknown
DL2632	123	123	123	123	123	Unknown
DL2691	136	136	136	136	136	Unknown
DL2712*	55	55	55	55	55	Unknown
DL2713*	149	149	149	149	149	Unknown
DL2714*	0	0	0	0	0	Unknown

NOTE: Bolded resource numbers indicate a resource within the proposed ROW and have distances ranging from 0 feet to 75 feet.
*indicates an archaeological resource located within an area already disturbed by previous construction of the Vassell Station.

5.3 Constructability

Potential engineering and construction challenges are important to consider when constructing a new transmission line. Constructability evaluates the use of existing transmission corridors, engineering challenges, and accessibility of a Proposed Route. For example, steep topography, non-standard ROWs, heavy angled structures, accessibility, safety, and cost can negatively impact the Project's overall constructability. Detailed constructability characteristics of each are described in **Section 5.3.1** through **Section 5.3.5**. Comparisons of the constructability considerations for each transmission line are presented in **Table 7** and **Table 8.**

5.3.1 Engineering

Land features and characteristics that require more complicated design or construction are considered engineering constraints. These include elements of the terrain (slope and valleys/waterbodies requiring long spans), nearby communication towers, access for construction and maintenance, route turns that require more heavy angled structures (greater than 30°), and crossing of non-compatible land uses, or those needing supplemental engineering design (e.g., crossing other high-voltage transmission lines). Line angles and the related need for more substantial structures can significantly increase construction timeframe, thus having a larger viewshed impact on landowners and overall project cost. Moreover, the two-pole structures required for any angles 30 degrees or greater require a larger footprint, thereby increasing the structure footprint and impacts to the property.

Engineering constraints often need to be considered from multiple perspectives, since some impacts may be offset by other benefits. For example, paralleling existing infrastructure and crossing over/under transmission lines, distribution lines, and pipelines can require specialized construction techniques and scheduled outages on the existing lines. Additionally, paralleling EHV lines for long distances can pose reliability concerns since long parallel alignments and/or multiple crossings of other high-voltage transmission lines can increase the potential for localized severe weather events to damage both lines and can damage one line in a manner that forces outages on both lines.

From an engineering/construction perspective, advantages to paralleling existing compatible linear ROWs typically include readily available access for construction and maintenance, as well as limited additional conflicts with airfields and airport airspace. Additionally, During the route development phase of the Project, existing compatible linear ROWs (roads, electrical transmission lines, and property boundaries) were identified and used as paralleling opportunities for Alternative Routes.

Resource Characteristics

The Company owns three existing transmission lines within the Study Area: the Kammer – Dumont 765 kV Transmission Line to the north, the Hyatt – Corridor 345 kV Transmission Line to the west, and the Conesville – Corridor 345 kV Transmission Line to the southwest (see **Map 1**). Based on their geographic orientations relative to the project endpoints, in addition to existing and proposed surrounding developed land uses, limited paralleling opportunities were identified for the Project and no EHV transmission line crossings are required. As described in the Project's general and technical guidelines (see **Section 2.4**), paralleling existing EHV transmission lines at one location for lengths of approximately three miles or less is optimal from a resiliency and reliability perspective.

Other linear infrastructure within the Study Area include: the US-62 corridor, OH-37 and OH-605, and local roads (e.g., County Line Road, Green-Cook Road, Duncan Plains Road, Edwards Road, Blamer Road). Residences, commercial, or industrial buildings are generally scattered throughout the Study Area along the US-62, OH-37, and OH-605 corridors and local roads (notably Center Village Road, Duncan Plains Road, and Trenton Road).

Paralleling existing straight roads can provide opportunities to reduce the number of angled structures. However, in some cases, paralleling road can also conflict with existing aboveground and underground utilities, bridges, and existing structures. When these constraints are encountered, it often requires a transmission line to cross back and forth along a roadway, which is not practical for a 345-kV transmission line. Multiple crossings along the same road can significantly increase the number of angle structures, which generally require large concrete foundations, two pole construction, and a greater visual impact. Ultimately, the Siting Team strategized against paralleling road ROW given the increased likelihood for potential viewshed impacts to existing and proposed residential development.

Wherever feasible, the Siting Team prioritized following agricultural property boundaries to minimize bisecting properties and disruption to field plowing and other agricultural activities. However, in several instances landowner feedback or proximity to residences necessitated bisecting agricultural fields in order to accommodate the overall visual and human environment siting constraints. Bisecting properties was also unavoidable from a wholistic approach, since continuing to parallel parcel boundaries is not always feasible to get from point A to point B and keep alignments straight to minimize angles greater than 30 degrees.

During the Study Segment Evaluation and Refinement Process (see **Section 3.7**) the Siting Team was made aware of a private airstrip in the central eastern portion the Study Area along Edwards Road (the Warped Wing Airstrip). Once identified, the private airstrip was noted as a significant constraint to the Project due to additional engineering and permitting concerns to maintain safe flying operations. These concerns were addressed by eliminating and/or modifying preliminary Study Segments prior to compiling the Alternative Routes. No additional public or private airports, airstrips, or heliports are located within the Study Area or within one mile of the Alternative Routes.

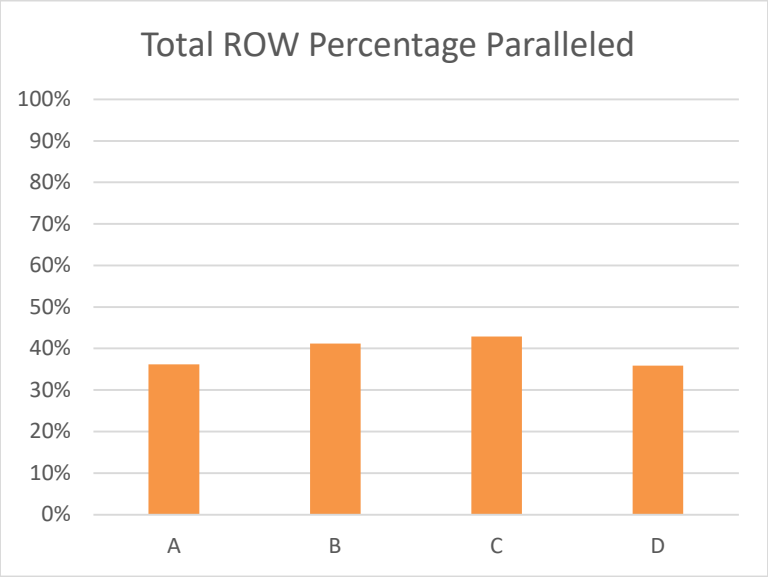
There are four FCC towers in the Study Area; however, from a routing perspective, the communications towers were located far enough from the Alternative Routes that no interference is anticipated and therefore was not a major constraint in the Study Area.

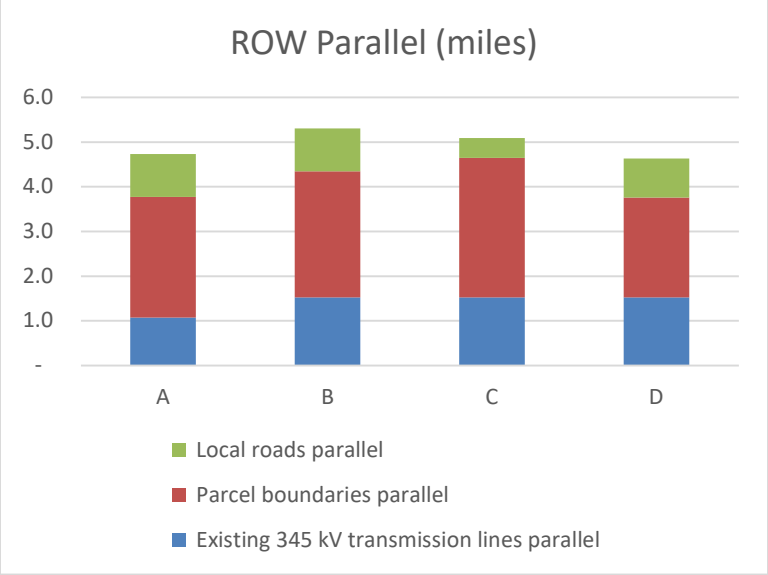
Two existing interstate oil/gas transmission pipelines are within the Study Area: the Marathon Heath – Findlay pipeline and a Columbia natural gas pipeline. Paralleling pipeline corridors is beneficial in heavily forested areas to minimize fragmentation of woodlots and forested habitat;

however, the Study Area is primarily agricultural throughout. Thus, paralleling the interstate gas pipelines was not considered, in addition to the mitigation requirements and associated costs for construction and/or long-term maintenance.

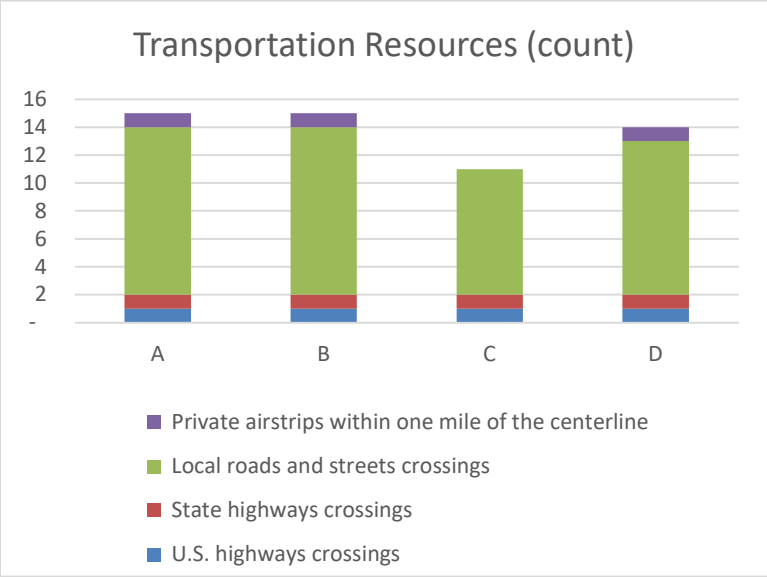
No active or abandoned mines, quarries, or railroads were identified within the Study Area. The Siting Team did not consider terrain as a siting factor for this Project because the topography is relatively flat with no known sinkhole issues.

Vassell – Curleys: Alternative Route Comparison

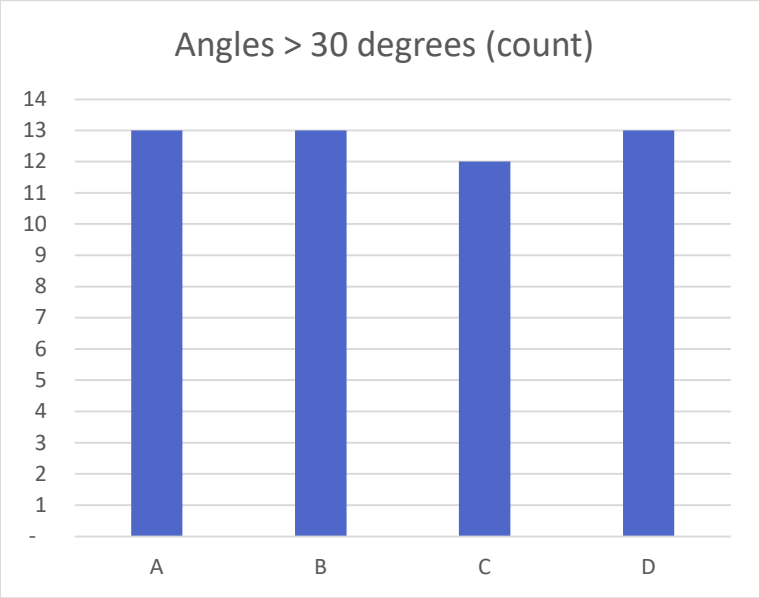




As shown below in **Table 7** and the charts opposite, all Alternative Routes parallel linear infrastructure or other suitable linear pathways for at least one-quarter of their total alignment. Parcel boundaries are the predominant routing opportunities identified for the Alternative Routes. Although all the Alternative Routes parallel existing linear pathways for similar percentages, Alternative Routes A and D have the lowest percentage of ROW parallel (approximately 36 percent). In contrast, Alternative Routes B and C maximize parallel opportunities by paralleling existing transmission corridors and parcel boundaries for a greater extent of their alignments (41% and 43%).



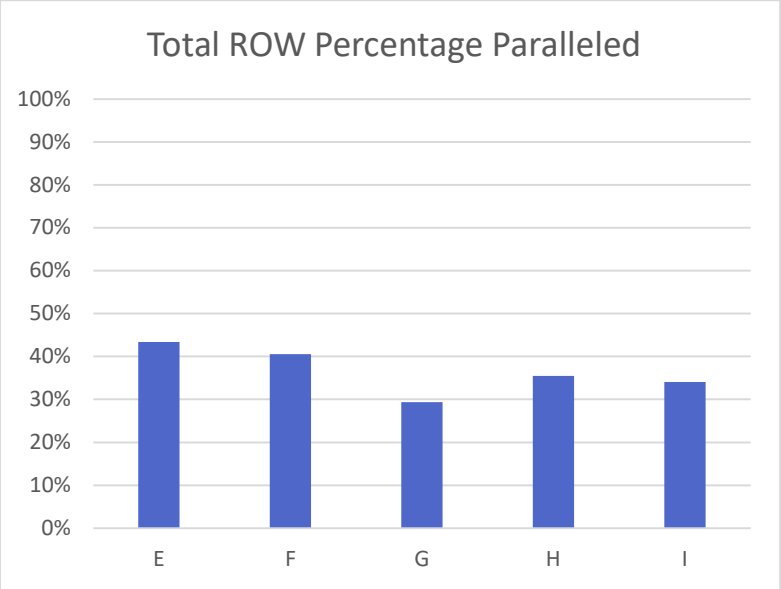
Other constructability criteria compared amongst the Alternative Routes consists of transportation resources and number of heavy angle structures (greater than 30 degrees). As shown in the chart opposite and **Table 8** below, each Alternative Route requires one U.S. highway crossing (US-62) and one state route crossing (OH-605 or OH-37). Otherwise, Alternative Route C shows most favorably for these combined criteria, requiring the least number of local road crossings (9) and being distanced further than one mile of the FAA Warped Wing Airstrip. The remaining Alternative Routes A, B, and D generally range higher for the combined criteria, as they require at least two more local road crossings and are located within one mile of the private airstrip.

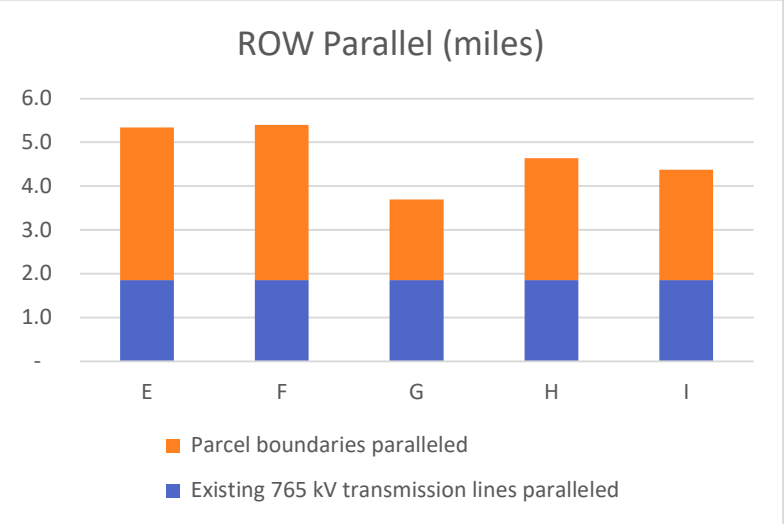


Heavy angle structures (greater than 30 degrees) were considered as a primary routing constraint to the Project due to their higher material and installation costs, as well as their physical footprint requirements and aesthetic impacts. Still, in order to circumnavigate dense residential areas and prioritize paralleling property boundaries to the best extent practicable, each Alternative Route will require several heavy angle structures. As shown in the chart above and **Table 7** below, Alternative Routes are similar in regard to angles and Alternative Route C has one less heavy angle compared to the remaining Alternative Routes A, B, and D.

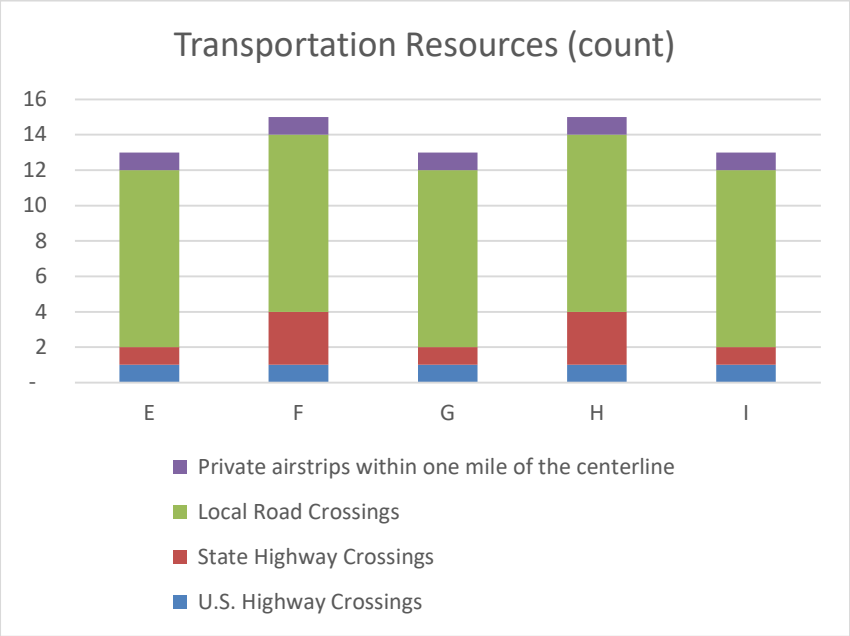
Overall, Alternative Route C shows best in terms of combined constructability categories since it has the shortest total alignment (11.9 miles), parallels linear features for a great extent of its total alignment, minimizes local road crossings, minimizes interstate pipeline crossings, and has one less heavy angle structure required.

Vassell – Green Chapel: Alternative Route Comparison



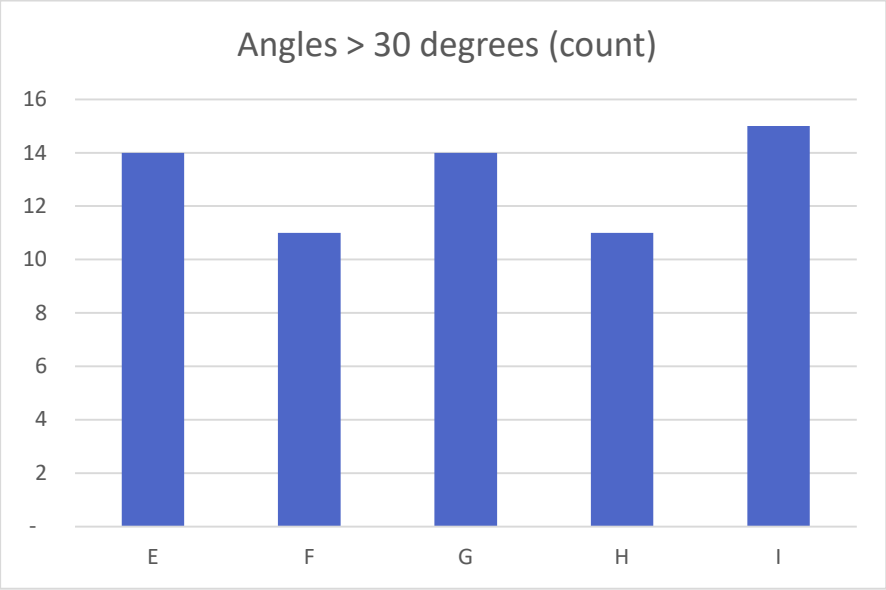


As shown in **Table 8** below and the adjacent charts, each Alternative Route parallels linear infrastructure or other suitable linear pathways for approximately 30 percent of their alignment. Parcel boundaries are the predominant routing opportunity for the Alternative Routes and none of the Alternative Routes parallel local roads. Overall, Alternative Route E represents the best option for these combined criteria since it parallels existing transmission corridors and parcel boundaries for the greatest percentage (42 percent). In contrast, Alternative Route G only parallels linear features for 29 percent of its alignment, but it is the shortest and most direct route.



Other constructability evaluation criteria compared amongst the Alternative Routes consists of road crossings, proximity to the private FAA Warped Wing Airstrip, and heavy angle structures (30 degrees or greater). As shown in **Table 8** below and the chart above, each Alternative Route requires one U.S. Highway crossing (US-62) and either 10 or 11 local road crossings. Alternative Route E only requires crossing OH-605 once, while the remaining Alternative Routes cross OH-605 once and OH-37 twice, for a total of three state highway crossings. Alternative Route E is the western-most alignment evaluated for the Vassell – Green Chapel 345 kV Transmission Line and is subsequently located further away from the private airstrip when compared to Alternative Routes F through I. Even though Alternative Routes F, G, H, and I are located in closer proximity to the Warped Wing Airstrip, attempts were made during the Study Segment evaluation and refinement process (see **Section 3.7**) to position the nearby alignments parallel to the runway.

Similar to the four Alternative Routes evaluated for the Vassell – Curleys 345 kV Transmission Line, the Vassell – Green Chapel Alternative Routes will require several heavy angle structures (greater than 30 degrees) in order to circumnavigate pockets or residential developments along local and major roads throughout the Study Area in addition to prioritizing following property boundaries. As shown in **Table 8** and the chart below, Alternative Routes F and H have the least number of heavy angle structures (11), while Alternative Route I has the most (15). Still, Alternative Routes F and H are the longest routing options available for connecting the project endpoints.



Overall, Alternative Route E has notable advantages for the combined constructability siting evaluation criteria by increasing distance between its alignment and the private FAA airstrip, reducing additional State Highway crossings, and maximizing parallel alignments.

5.3.2 Topographic and Geotechnical

Topography in the Study Area is relatively flat and within three geologic areas: The Berea Sandstone and the Ohio Shale, both Devonian age, and the Maxville Limestone of the Mississippian age. The Berea Sandstone is characterized by a sandstone and shale, thin to thick beds with shades ranging from brown to reddish brown; the Ohio Shale ranges from brownish black to greenish gray with thin beds of shale; and the Maxville Limestone consists of interbedded shale, siltstone, and sandstone of varying shades of gray (USGS, n.d.)[7].

Karst is a bedrock formation that is susceptible to chemical weathering or dissolution of carbonaceous rock resulting in irregular bedrock and/or sinkholes. As mentioned above in **Section 5.1.2**, the Company conducted a desktop geological study, which identified karst in the Study Area based on ODNR data. Additional geological investigations will be conducted for the proposed line routes to better characterize the site specific karst risk.

Resource Characteristics

From a topographic and geotechnical perspective, each Alternative Route developed for the Vassell – Curleys 345 kV Transmission Line and the Vassell – Green Chapel 345 kV Transmission Line crosses similar conditions and therefore no one route stands out. Since the landscape is

[7] U.S. Department of the Interior, United States Geologic Survey (USGS), n.d. Geologic maps of US states. Retrieved on November 28, 2020 from: https://mrdata.usgs.gov/geology/state/

generally flat with no active or abandoned mines or quarries present and karst geological areas have been identified, moderate risks were identified for the Project. Prior to construction, additional geological investigations will occur for the Proposed Routes in order to better characterize site specific risks.

5.3.3 Access Roads

Paralleling roadways was not identified as a suitable routing opportunity for the Project, due to the potential viewshed impacts to residences along local roads. Still, proximity to existing roads is advantageous for construction access and future maintenance. Permanent access roads are not anticipated for the Project at this time and will not be known for certain until construction teams have reviewed access and ROW agents have discussions with landowners. Access to routes across agricultural fields could pose a challenge if conditions become wet, as can access across those same fields to construct routes that parallel local roads. In some cases, existing dirt access roads and local roads may require improvements to accommodate construction equipment. Permanent and temporary earth disturbance may require appropriate National Pollutant Discharge Elimination System (NPDES) and other permits with federal, state, and local jurisdictions.

Resource Characteristics and Comparison

The Study Area is primarily comprised of large agricultural tracts; most of which have several dirt paths to fields for plowing. Generally, the Alternative Routes identified for each portion of the Project traverse areas with suitable access, as they all parallel existing transmission corridors or parcel boundaries through agricultural land for most of their alignment and are generally located in proximity to local roads.

5.3.4 Operation, Maintenance, and System Considerations

Paralleling existing transmission lines is typically regarded as a routing opportunity, as long as these types of alignments are assessed from a combined perspective of operation, maintenance, and system considerations. Minimizing the crossing of other high voltage or EHV transmission lines and pipelines are included in the Project's technical guidelines, as such crossings pose reliability or mitigation concerns.

The Siting Team evaluated paralleling limited portions of existing Company-owned EHV transmission lines near the Vassell Station. Double circuiting other existing EHV transmission lines in the project area was not feasible. Similarly, placing two new 345 kV transmission lines parallel to one another for their entire lengths was not feasible from a combined reliability and resiliency perspective since certain incidents could eliminate service to multiple customers simultaneously for extended periods of time. However, the Siting Team evaluated the feasibility of locating the

Vassell – Curleys and Vassell – Green Chapel 345 kV transmission lines parallel to one another (on a combined 300-foot ROW) for shorter lengths and where the alternative routes used similar alignments. A shared 300-foot-wide corridor (where considered viable) can optimize constructability factors (access, cost, and schedule) and reduce impacts to affected landowners.

Paralleling of existing interstate pipelines is a routing constraint due to the associated costs for construction and/or long-term maintenance when building a 345 kV transmission line parallel to existing oil/gas infrastructure, such as cathodic protection. Similarly, the Siting Team minimized pipeline crossings to the best extent practicable and 60 to 90 degree crossings are preferred.

Vassell – Curleys: Alternative Route Comparison

During the conceptual routes phase of the Project, the Siting Team avoided crossing any existing EHV transmission lines. Suitable EHV parallel opportunities for the Vassell – Curleys 345 kV Transmission Line were identified along a portion of the existing Hyatt – Corridor 345 kV Transmission Line (see **Map 4a, Attachment A**), located between the existing Vassell Station and Miller-Paul Road. As shown in **Table 7** above and the chart below, the Alternative Routes parallel between 1.1 or 1.5 miles of the existing Hyatt – Corridor 345 kV Transmission Line ROW, remaining under the approximately three-mile preferred distance threshold.

Due to their locations and orientations relative the project endpoints, crossing existing interstate pipeline corridors was unavoidable. As shown in **Table 7** Alternative Routes B and D each require the most interstate pipeline crossings (6), followed by Alternative Route A (4) and Alternative Route C (2). Due to localized residential constraints near the interstate pipeline centerlines, most of the pipeline crossings required for the Alternative Routes do not fall within the favorable range of angles (60 to 90 degrees).

Vassell – Green Chapel: Alternative Route Comparison

Similar to the Vassell – Curleys 345 kV Transmission Line, there are reliability concerns from an EHV line perspective related to length of parallel to other EHV transmission lines. Since no EHV crossings are required and alignments parallel to existing EHV transmission lines were used for short lengths, no significant reliability concerns were identified. As shown in **Map 4b, Attachment A** and **Table 8** above, each Alternative Route evaluated for the Vassell – Green Chapel 345 kV Transmission Line parallel the existing Kammer – Dumont 765 kV Transmission Line ROW for an identical length (1.9 miles) and remaining under the approximately three-mile preferred distance threshold.

Similar to the routes evaluated for the Vassell – Curleys 345 kV Transmission Line, the Alternative Routes evaluated for the Vassell – Green Chapel 345 kV Transmission Line require either two (Alternative Routes F and H), four (Alternative Routes E and I), or six (Alternative Route G)

interstate oil/gas pipeline crossings and most of those required crossings fall outside the favorable range of angles (60 to 90 degrees), primarily due to localized residential constraints.

Table 7. Constructability Evaluation Criteria (Vassell – Curleys)					
Alternative Route	**Unit**	**A**	**B**	**C**	**D**
General					
Length	miles	13.1	12.9	11.9	12.9
150-foot ROW	acres	238.3	234.4	215.7	234.9
Heavy angles, greater than 30°	count	13	13	12	13
Transportation Resources					
Local road crossings	count	12	12	9	11
U.S. Highway crossings	count	1	1	1	1
State Route crossings	count	1	1	1	1
Airports within one mile of the centerline	count	1	1	0	1
Utility Resources					
Oil and gas pipeline crossings	count	4	6	2	6
Rights-of-Way Parallel					
Existing 345 kV transmission line parallel	miles	1.1	1.5	1.5	1.5
Local road parallel	miles	1.0	1.0	0.4	0.9
Parcel boundary parallel	miles	2.7	2.8	3.1	2.2
Total length parallel	miles	4.7	5.3	5.1	4.6
	percent	36%	41%	43%	36%

Vassell – Curleys 345 kV Transmission Line – Constructability Summary:

Alternative Route C is most favorable for engineering and constructability factors:

- Alternative Route C is the shortest, most direct route with the least number of angles greater than 30 degrees.
- Alternative Route C parallels existing EHV corridors and other compatible linear corridors to the highest extent, or 43 percent of its total alignment length.
- Alternative Route C requires the least number of local road crossings and interstate pipeline crossings.

Alternative Route A is least favorable for engineering and constructability factors:

- Alternative Route A is the longest, most circuitous route identified for the Vassell – Curleys 345 kV Transmission Line.
- Alternative Route A parallels existing EHV corridors for the shortest length in addition minimizing paralleling opportunities for other suitable linear corridors (36 percent of its total alignment).

Table 8. Constructability Evaluation Criteria (Vassell – Green Chapel)						
Alternative Route	**Unit**	**E**	**F**	**G**	**H**	**I**
General						
Length	miles	12.3	13.3	12.6	13.1	12.8
150-foot ROW	acres	224.3	242.1	229.0	237.9	233.7
Heavy angles, greater than 30°	count	14	11	14	11	15
Transportation Resources						
Local road crossings	count	10	10	10	10	10
U.S. Highway crossings	count	1	1	1	1	1
State Highway crossings	count	1	3	1	3	1
Airports within one mile of the centerline	count	1	1	1	1	1
Utility Resources						
Oil and gas pipeline crossings	count	4	2	6	2	4
Rights-of-Way Parallel						
Existing 765 kV transmission line parallel	miles	1.9	1.9	1.9	1.9	1.9
Parcel boundary parallel	miles	3.5	3.5	1.8	2.8	2.5
Total length parallel	miles	5.3	5.4	3.7	4.6	4.4
	percent	43%	41%	29%	35%	34%

Vassell – Green Chapel 345 kV Transmission Line – Constructability Summary:

Alternative Route E is most favorable for engineering and constructability factors:

- Alternative Route E is the shortest, most direct route identified for the Vassell – Green Chapel 345 kV Transmission Line.
- Alternative Route E parallels existing EHV corridors and other compatible linear corridors to the highest extent, or 43 percent of its total alignment length.

Alternative Route G is least favorable for engineering and constructability factors:

- Alternative Route G minimizes paralleling opportunities for suitable linear corridors (only 29 percent of its total alignment).
- Alternative Route G requires the most interstate pipeline crossings.

6.0 IDENTIFICATION OF THE PROPOSED ROUTES

The goal of the Project and Siting Study was to identify two separate 345 kV transmission line corridors to support customer demands, economic development, and maintain electric reliability in the region. A Proposed Route represents the Alternative Route that best minimizes potential impacts on the natural and human environment while avoiding indirect routes, unreasonable costs, and special design requirements. However, in practice, it is not usually possible to minimize all potential impacts simultaneously. There are often tradeoffs in potential impacts to every siting decision. For example, in heavily forested areas, the route that avoids the most developed areas will likely have the greatest amount of forest clearing, while the route that has the least impact on vegetation and wildlife habitats often impacts more residences or commercial development. Thus, an underlying goal of a Siting Study is to reach a reasonable balance between minimizing potential impacts on one resource versus increasing the potential impacts on another.

The Company collected, reviewed, and interpreted information before beginning to generate potential routes. Although most route segments proved to be viable, there were noteworthy differences between the proposed options. The rationale for the selection of the Proposed Routes, presented below, are derived from the accumulation of the routing decisions made throughout the process, the local knowledge and experience of the Siting Team, input provided by landowners and stakeholders, and the comparative analysis of potential impacts presented in **Section 5.0**.

Based on the comparison conducted for this Siting Study, the Siting Team identified a Proposed Route for each 345-kV transmission line and believes the Proposed Routes are: (1) most consistent with the siting guidelines; (2) reasonably minimizes adverse impacts on area land uses (especially existing and future developed land use) and the natural and cultural environments; (3) minimizes special design requirements and unreasonable costs; and (4) can be constructed and operated in a safe, timely, and reliable manner.

Vassell – Curleys 345 kV Transmission Line Alternative Route Comparison Summary

Four Alternative Routes were evaluated to connect the Vassell and Curleys Stations. All routes share a portion of their length with another, but there are notable overall differences between the Alternative Routes. Alternative Routes A, B, and D all use a more eastern alignment whereas Alternative Route C remains to the west. Alternative Route C is a shorter and more direct route but has significant residential and environmental constraints surrounding the Center Village Road crossing. These constraints ultimately, led to the dismissal of Alternative Route C. Alternative Routes A, B, and D are similar, but have inherit trade-offs. Alternative A does not parallel the 345 kV line for as long Alternatives B and D, but rather takes a straight cross-country alignment immediately north of a new residential development on Trenton Road. Additionally, Alternative

Route A has several minor angles to avoid small area constraints. Alternative B parallels the existing 345 kV transmission line for the same distance as Alternative Route D but continues a straight path east. Alternative Route B turns south through a residential area, with several minor angles to avoid homes and crosses back and forth across parcel boundaries.

Alternative Route D is the best combination of A and B and maximizes the paralleling the 345 kV line, while also avoiding two residential areas, minimizing length, and remaining in agricultural fields for greater distances. **As such, Alternative Route D was selected as the Proposed Route for the Vassell – Curleys 345 kV Transmission Line.**

Vassell – Green Chapel 345 kV Transmission Line Alternative Route Comparison Summary

Five Alternative Routes were evaluated to connect the Vassell and Green Chapel Stations and all routes share a portion of their length with one another. Alternative Route E is the only route that enters the Green Chapel Station from the west, which avoids a dense residential pinch point along Duncan Plains Road. Alternative Routes H and F are almost identical except for a small section near the private airstrip. Alternative Route F is the longest route (one mile longer than Alternative Route E), in closer proximity to homes, near the Clover Valley Golf Club, and crosses the most landowners and parcels of the routes considered. While Alternative F is further from the private airstrip, it has little other benefits and was ultimately dismissed.

Similarly, Alternative Route H has a lot of the same constraints as Alternative Route F but is closer to the private airstrip. Alternative Routes E and G are similar and represent the western most routes and are the shortest and most direct, while also minimizing the impacts to residents in the Study Area. Alternative Route I is a combination of the eastern and western routes and has the highest number of heavy angles to connect these two route concepts. Alternative Route E has one attribute that the other Alternative Routes do not have and that is the entrance into the Green Chapel Station. By approaching the Green Chapel Station from the west, Alternative Route E minimizes the total line length, which thereby minimizes overall human environment and natural resource impacts.

Based the above information, Alternative Route E was selected as the Proposed Route for the Vassell – Green Chapel 345 kV Transmission Line.

Companion Route Review and Summary

The Siting Team identified Alternative Route D and Alternative Route E as the preliminary Proposed Routes for the two new 345 kV lines. Before final Proposed Route selection, the Siting Team had to evaluate how each proposed 345 kV transmission line would accompany one another from a comprehensive viewpoint, as Alternative Routes D and E share alignments for a portion of their length. As such, the Siting Team evaluated whether a shared 300-foot-wide

corridor (two parallel 150-foot-wide ROWs) was feasible. After review, the parallel alignments still effectively minimized encroachments, while also addressing system reliability concerns, by paralleling for approximately three miles or less and creating direct routes between end points. As such, **Alternative Route D and Alternative Route E were selected as the final Proposed Routes for the two new power lines.**

Overall, the summary below highlights the benefits of the combined Alternative Routes D and E. These corridors when viewed in total minimize impacts to the built and natural environment, reduce interferences with existing infrastructure, and optimize Project constructability factors such as construction schedule, access, and cost:

- Alternative Routes D and E significantly reduce the total number of parcels and landowners as well as the total number of residences within 500 feet, by providing non-circuitous routes, in addition to avoiding major residential pinch points identified in proximity to Duncan Run and the City of Johnstown.

- Alternative Route E crosses the least number of parcels and landowners and by co-locating the Proposed Routes within a shared 300-foot-wide corridor for approximately 3.2 miles, the total number of parcels and landowners crossed by Alternative Route E are also further reduced.

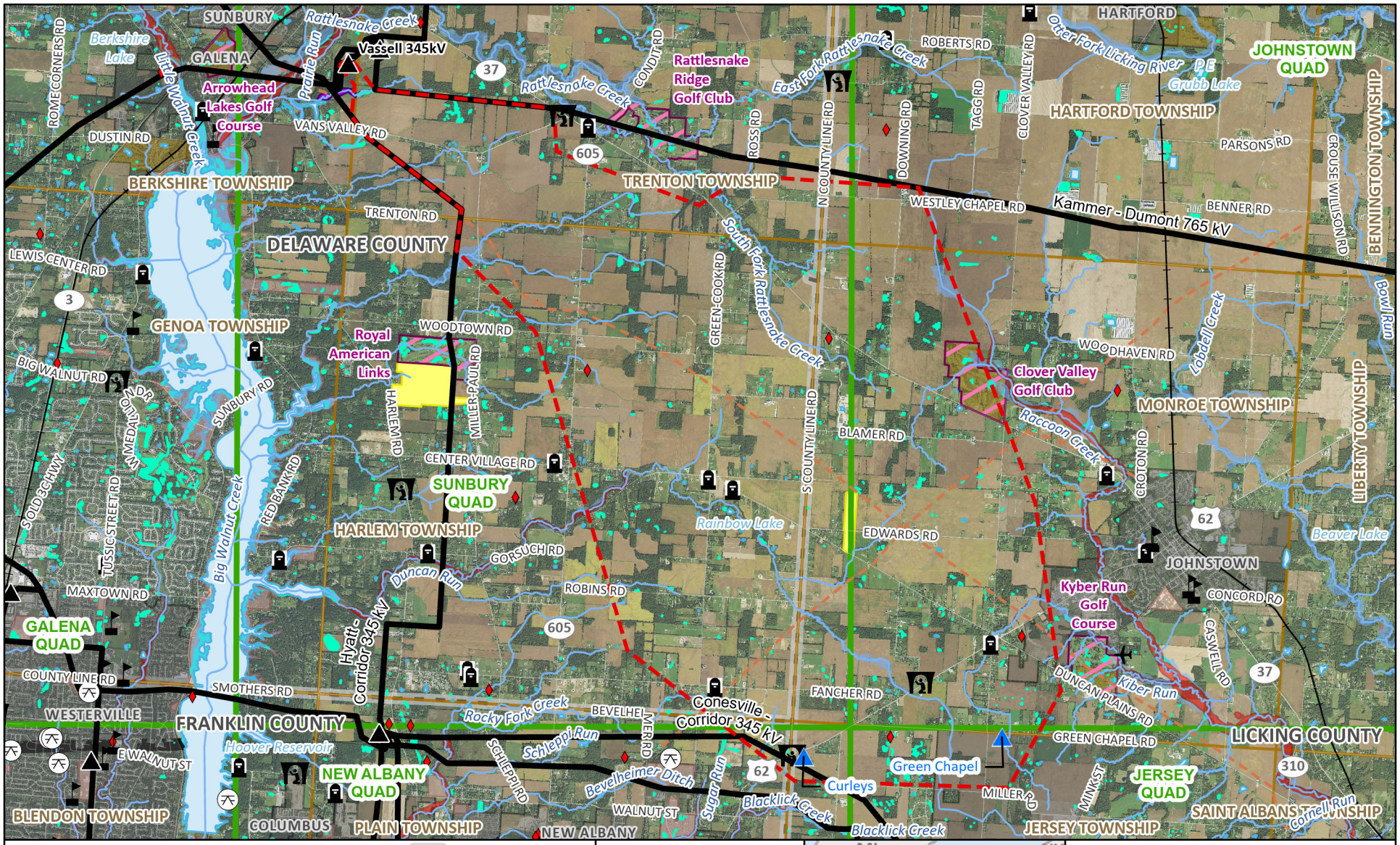
- Alternative Routes D and E traverse predominantly cross-country through agricultural land, especially within their shared 300-foot-wide corridor, thereby reducing ROW tree clearing requirements and impacts to other sensitive natural resources and reducing the total number of occupied structures within 500 feet of the centerline.

- Access within the shared 300-foot-wide corridor of Alternative Routes D and E is favorable, since surrounding land use is primarily agricultural. Temporary access roads can be used for the construction of both new 345 kV transmission lines, where they parallel.

- Alternative Routes D and E minimize impacts to water resources by avoiding crossing Rattlesnake Creek and a complicated, flood prone location of Duncan Run. They also best minimize tree clearing by maximizing the crossing of agricultural lands.

- From other engineering and constructability standpoints, Alternative Routes D and E are direct, non-circuitous routes for connecting the existing Vassell Station to the proposed Curleys and Green Chapel stations. Their alignment avoids potential risks with the Warped Wing private airstrip since it is located further outside of the FAA obstruction buffer.

Attachment A: Maps



Proposed Substation
Existing Substation
Airport
Cemetery
Place of Worship
Park
School
FCC Communications Tower
Existing Transmission Line
Railroad
Existing Pipeline
NHD Stream or River
Study Area
NHD Waterbody
FEMA Regulatory Floodway
FEMA 100-year Floodplain
NWI Wetland
Municipal Boundary
Township Boundary
County Boundary
USGS Quad Boundary
Golf Course
Wetland Mitigation Area
ODA Easement
PADUS Ownership Type
City Land
Private Land

Data Sources:
FAA 2021, FCC 2021,
ESRI 2013 & 2021,
ODOT 2021,
USGS 2013 & 2021.

State Plane
Ohio North
NAD 83

January 04, 2024

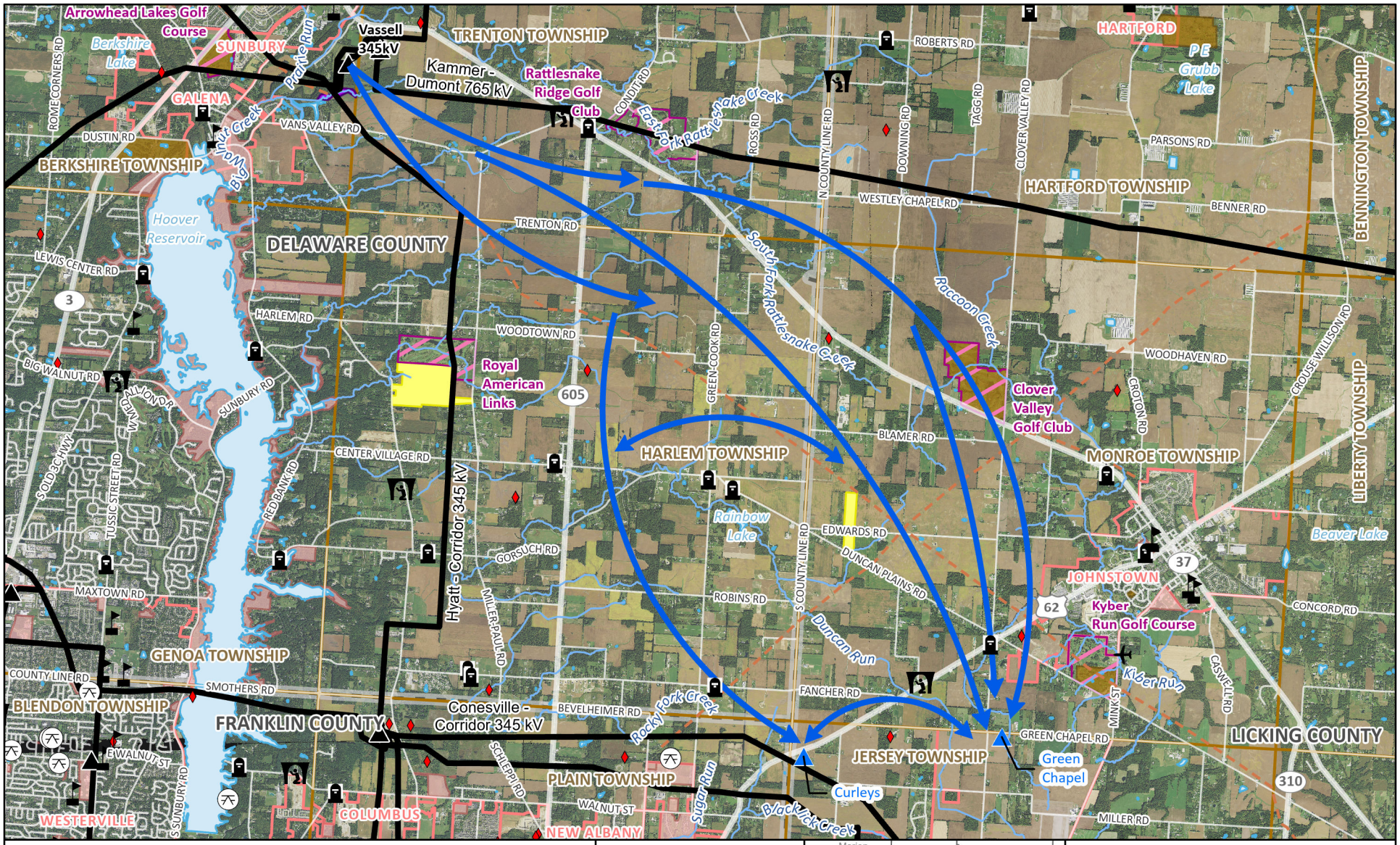


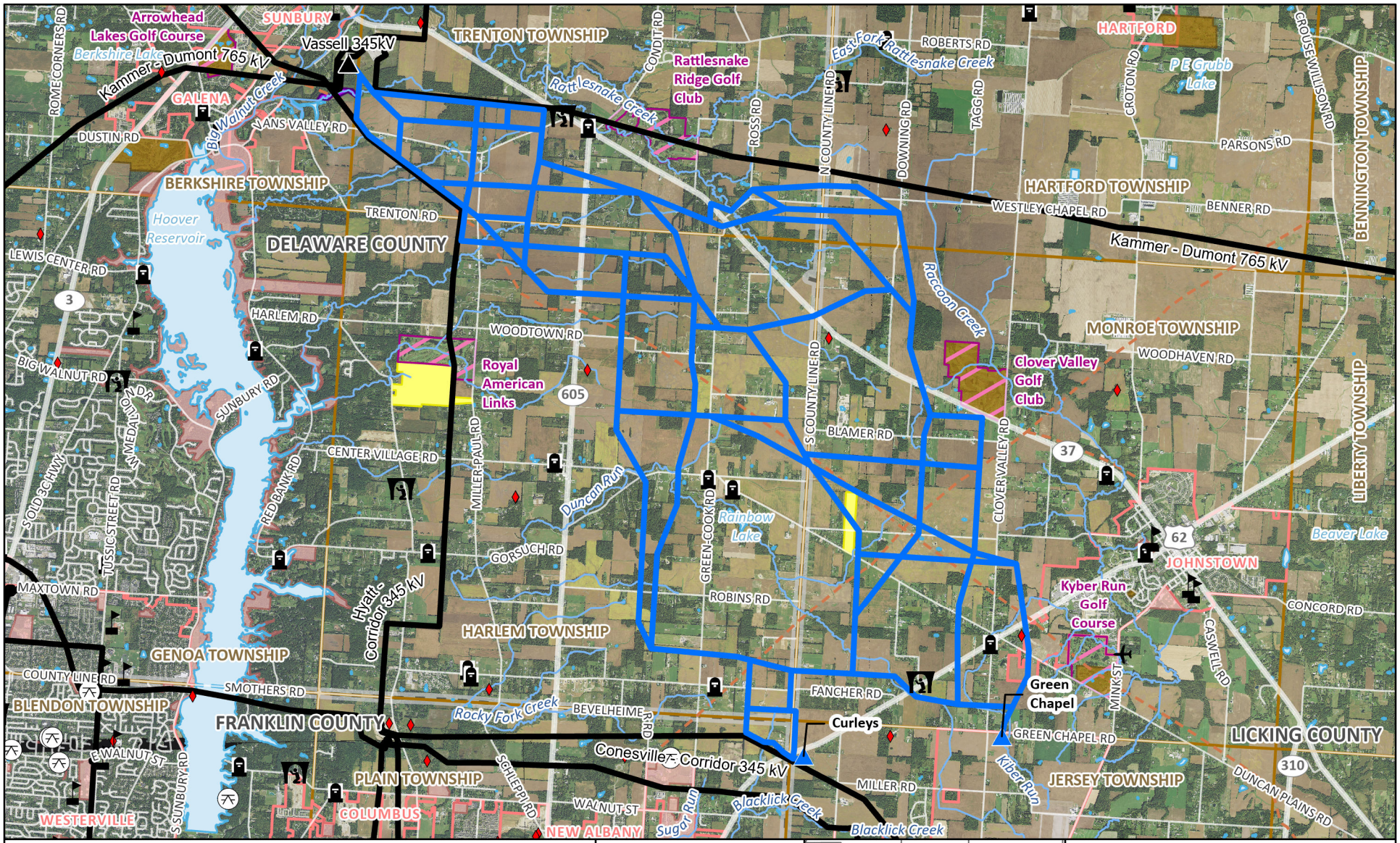
Map 1
Study Area

AEP OHIO TRANSMISSION COMPANY
An AEP Company
BOUNDLESS ENERGY

Vassell - Green Chapel Transmission Enhancements

0 1 2
Miles


Arrowhead Lakes Golf Course
Berkshire Lake
SUNBURY
Prairie Run
Vassell 345kV
TRENTON TOWNSHIP
Kammer - Dumont 765 kV
Rattlesnake Ridge Golf Club
HARTFORD
P E Grubb Lake
GALENA
Big Walnut Creek
VANS VALLEY RD
DUSTIN RD
BERKSHIRE TOWNSHIP
Hoover Reservoir
DELAWARE COUNTY
HARTFORD TOWNSHIP
WESTLEY CHAPEL RD
BENNER RD
PARSONS RD
BENNINGTON TOWNSHIP
LIBERTY TOWNSHIP
TRENTON RD
LEWIS CENTER RD
HARLEM RD
WOODTOWN RD
Royal American Links
South Fork Rattlesnake Creek
Raccoon Creek
Clover Valley Golf Club
WOODHAVEN RD
BIG WALNUT RD
SUNBURY RD
605
BLAMER RD
HARLEM TOWNSHIP
MONROE TOWNSHIP
CENTER VILLAGE RD
Hyatt - Corridor 345 kV
Rainbow Lake
EDWARDS RD
Beaver Lake
GORSUCH RD
DUNCAN PLAINS RD
JOHNSTOWN
37
MAXTOWN RD
ROBINS RD
62
Kyber Run Golf Course
CONCORD RD
Duncan Run
Kyber Run
GENOA TOWNSHIP
COUNTY LINE RD
SMOTHERS RD
FANCHER RD
BLENDON TOWNSHIP
Conesville - Corridor 345 kV
BEVELHEIMER RD
Rocky Fork Creek
FRANKLIN COUNTY
GREEN CHAPEL RD
JERSEY TOWNSHIP
Green Chapel
LICKING COUNTY
EWALNUT ST
SCHLEPPI RD
PLAIN TOWNSHIP
Curleys
310
WESTERVILLE
COLUMBUS
WALNUT ST
Sugar Run
Blacklick Creek
NEW ALBANY
MILLER RD
Proposed Substation
Existing Substation
Airport
Cemetery
Place of Worship
Hospital
Park
School
FCC Communications Tower
Conceptual Route
Railroad
Existing Pipeline
NHD Stream or River
NHD Waterbody
Golf Course
Wetland Mitigation Area
ODA Easement
PADUS Ownership Type
City Land
Private Land
Municipal Boundary
Township Boundary
County Boundary
Data Sources:
FCC 2021,
ESRI 2013 & 2021,
NAIP 2021, ODOT 2021,
USGS 2013 & 2021.
State Plane
Ohio North
NAD 83
January 04, 2024
Marion County
Morrow County
Knox County
Delaware County
Union County
Licking County
Madison County
Franklin County
Columbus
Fairfield County
Perry County
Map 2
Conceptual Routes
AEP OHIO TRANSMISSION COMPANY
Vassell - Green Chapel
Transmission Enhancements
0
0.75
1.5
2.25
3
Miles



Existing Substation
Proposed Substation
Airport
Cemetery
Place of Worship
Hospital
Park
School
FCC Communications Tower
Preliminary Study Segment
Existing Transmission Line
NHD Stream or River
NHD Waterbody
Golf Course
Wetland Mitigation Area
ODA Easement
Municipal Boundary
Township Boundary
County Boundary

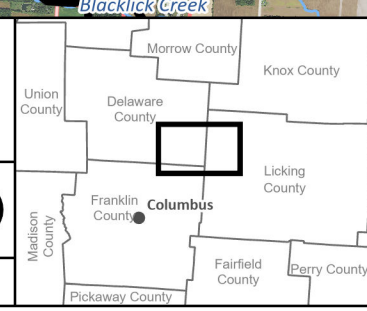
PADUS Ownership Type

City Land
Private Land

Data Sources:
FCC 2021,
ESRI 2013 & 2021,
NAIP 2021, ODOT 2021,
USGS 2013 & 2021.

State Plane
Ohio North
NAD 83

January 04, 2024

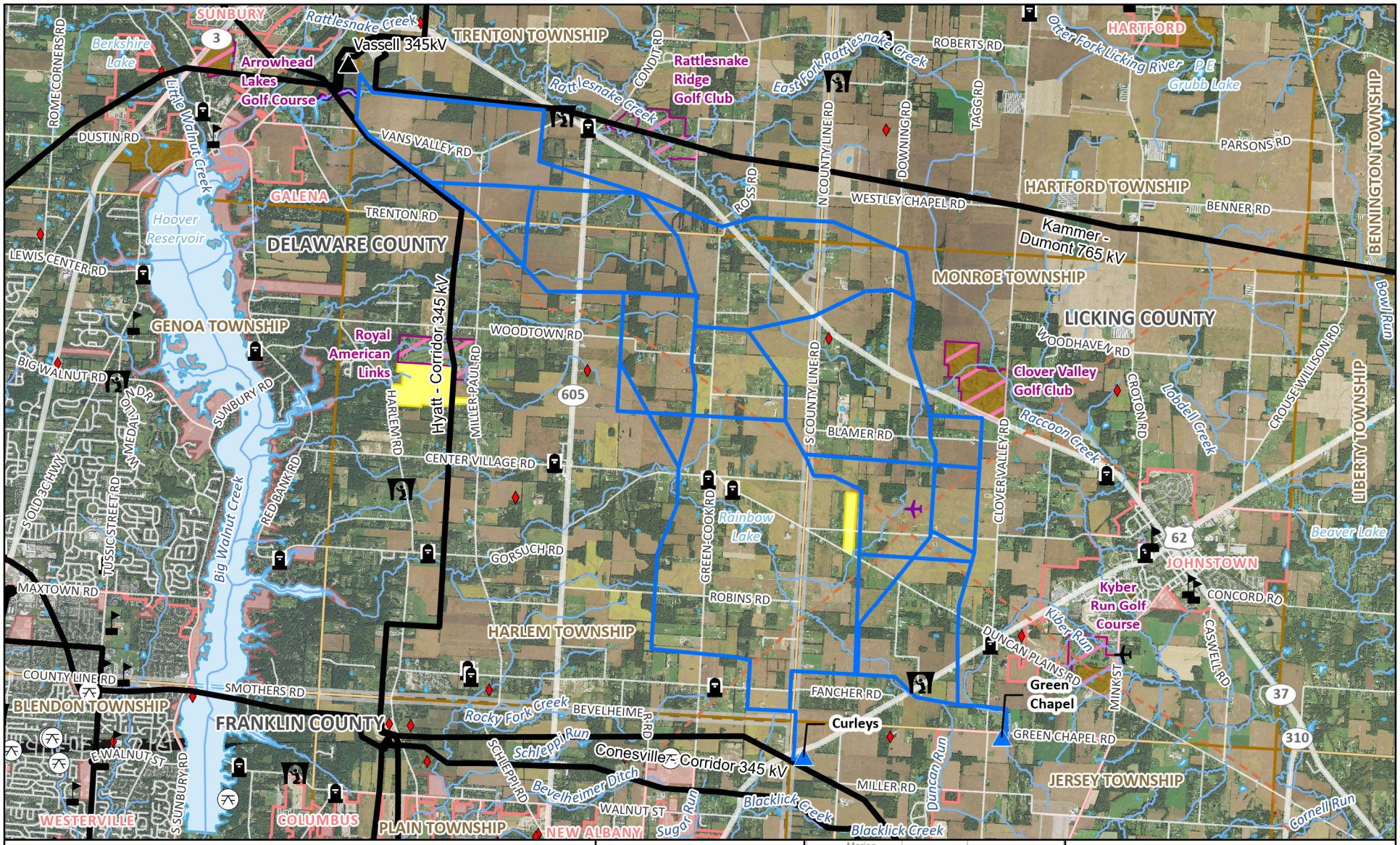


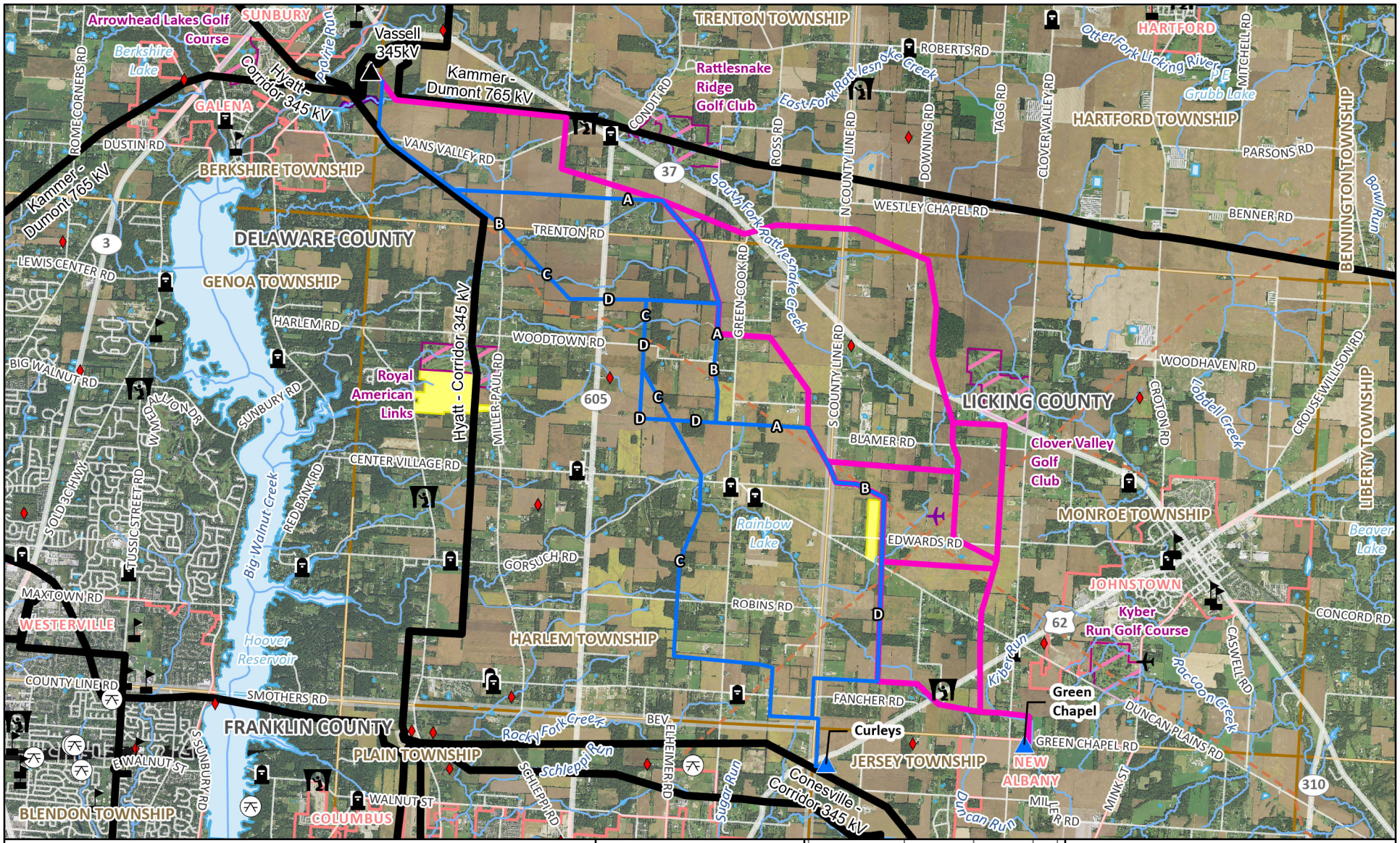
Map 3a
Preliminary Study Segments

AEP OHIO TRANSMISSION COMPANY
An AEP Company
BOUNDLESS ENERGY

Vassell - Green Chapel Transmission Enhancements

0 0.75 1.5 2.25 3
Miles


SUNBURY
Rattlesnake Creek
Vassell 345kV
TRENTON TOWNSHIP
HARTFORD
Otter Fork Licking River
P.E. Grubb Lake
Berkshire Lake
Arrowhead Lakes Golf Course
Rattlesnake Ridge Golf Club
East Fork Rattlesnake Creek
ROBERTS RD
ROME CORNERS RD
DUSTIN RD
Little Walnut Creek
VANS VALLEY RD
PARSONS RD
HARTFORD TOWNSHIP
BENNINGTON TOWNSHIP
GALENA
Hoover Reservoir
TRENTON RD
WESTLEY CHAPEL RD
BENNER RD
Kammer - Dumont 765 kV
DELAWARE COUNTY
LEWIS CENTER RD
MONROE TOWNSHIP
LICKING COUNTY
GENOA TOWNSHIP
Royal American Links
WOODTOWN RD
Hyatt - Corridor 345 kV
WOODHAVEN RD
Clover Valley Golf Club
BIG WALNUT RD
SUNBURY RD
605
BLAMER RD
Raccoon Creek
Lobdell Creek
CROUSE WILLISON RD
LIBERTY TOWNSHIP
CENTER VILLAGE RD
Rainbow Lake
Beaver Lake
62
JOHNSTOWN
GORSUCH RD
Kyber Run Golf Course
MAXTOWN RD
ROBINS RD
CONCORD RD
HARLEM TOWNSHIP
Kibler Run
DUNCAN PLAINS RD
COUNTY LINE RD
SMOTHERS RD
FANCHER RD
Green Chapel
37
BLENDON TOWNSHIP
FRANKLIN COUNTY
Rocky Fork Creek
BEVELHEIMER RD
Curleys
GREEN CHAPEL RD
310
E WALNUT ST
Schleppi Run
Conesville - Corridor 345 kV
JERSEY TOWNSHIP
SCHLEPPI RD
Bevelheimer Ditch
MILLER RD
Duncan Run
WESTERVILLE
COLUMBUS
WALNUT ST
Blacklick Creek
PLAIN TOWNSHIP
NEW ALBANY
Sugar Run
Cornell Run
Proposed Substation
Existing Substation
Airport
Cemetery
Place of Worship
Hospital
Park
School
FCC Communications Tower
FAA Private Airstrip
Revised Study Segments
Existing Transmission Line
Existing Pipeline
NHD Stream or River
NHD Waterbody
Golf Course
Wetland Mitigation Area
ODA Easement
Municipal Boundary
Township Boundary
County Boundary
PADUS Ownership Type
City Land
Private Land
Data Sources:
FCC 2021,
ESRI 2013 & 2021,
NAIP 2021, ODOT 2021,
USGS 2013 & 2021.
State Plane
Ohio North
NAD 83
January 16, 2024
Marion County
Morrow County
Knox County
Union County
Delaware County
Licking County
Franklin County
Columbus
Madison County
Fairfield County
Perry County
Map 3b
Revised Study Segments
AEP OHIO TRANSMISSION COMPANY
Vassell - Green Chapel
Transmission Enhancements
0
0.75
1.5
2.25
3
Miles

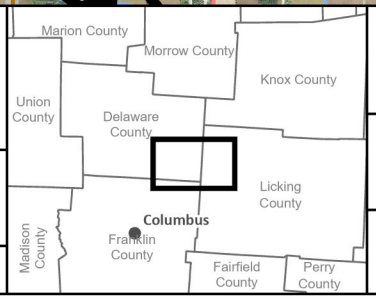


Existing Substation
Proposed Substation
FAA Private Airstrip
Airport
Cemetery
Place of Worship
Hospital
Park
School
FCC Communications Tower
Vassell - Curleys Alternative Route
Vassell - Green Chapel Alternative Route
Existing Transmission Line
Existing Pipeline
NHD Stream or River
NHD Waterbody
Golf Course
Wetland Mitigation Area
ODA Easement
Municipal Boundary
Township Boundary
County Boundary

Data Sources:
FCC 2021,
ESRI 2013 & 2021,
NAIP 2021, ODOT 2021,
USGS 2013 & 2021.

State Plane
Ohio North
NAD 83

January 17, 2024

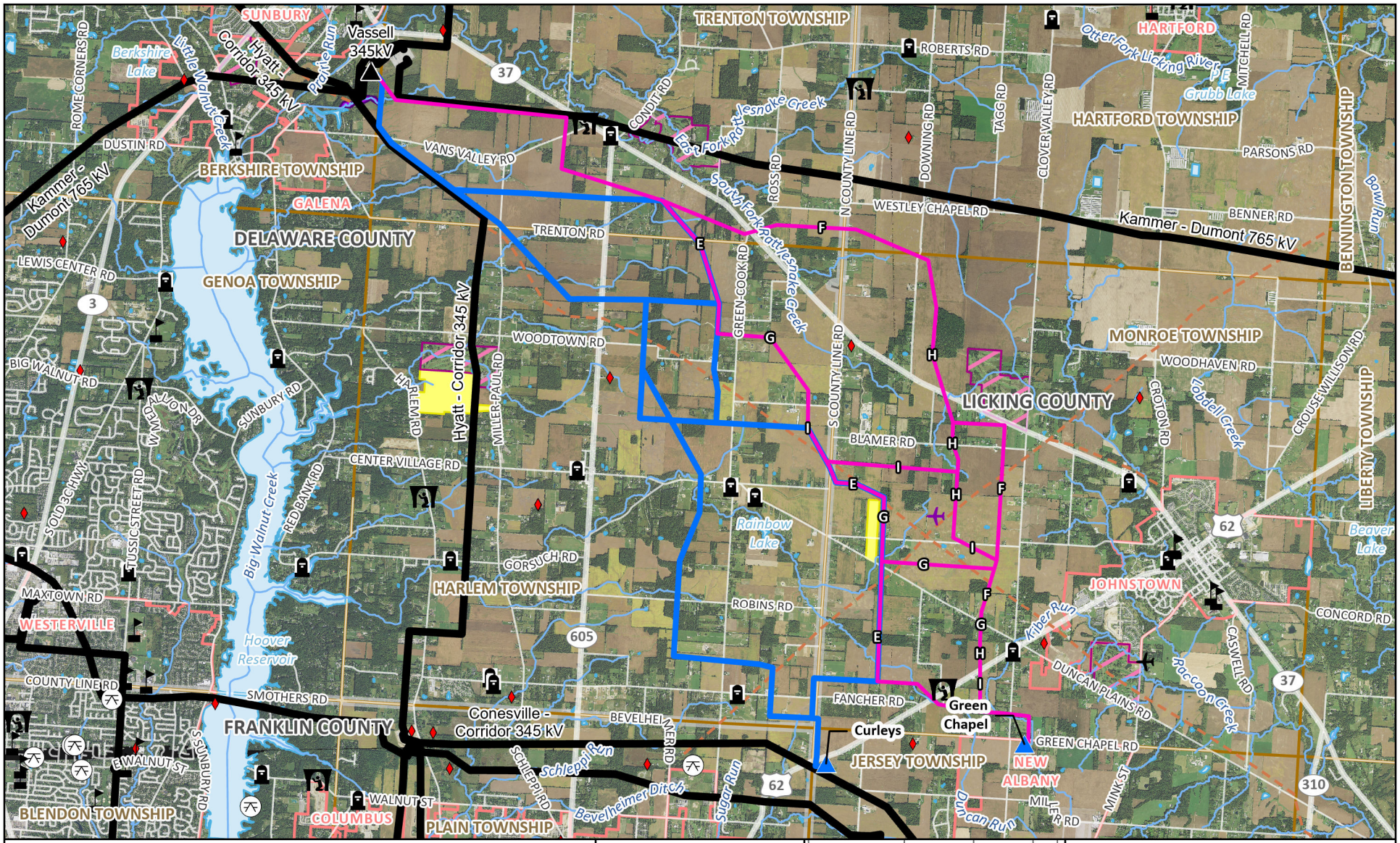


Map 4a
Alternative Routes
(Vassell - Curleys)

AEP OHIO TRANSMISSION COMPANY
An AEP Company
BOUNDLESS ENERGY

Vassell - Green Chapel
Transmission Enhancements

0 0.75 1.5 2.25 3
Miles

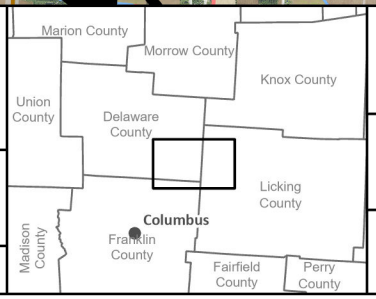


- Proposed Substation
- Existing Substation
- FAA Private Airstrip
- Airport
- Cemetery
- Place of Worship
- Hospital
- Park
- School
- FCC Communications Tower
- Vassell - Green Chapel Alternative Route
- Vassell - Curleys Alternative Route
- Existing Transmission Line
- Existing Pipeline
- NHD Stream or River
- NHD Waterbody
- Wetland Mitigation Area
- ODA Easement
- Golf Course
- Municipal Boundary
- Township Boundary
- County Boundary

Data Sources:
FCC 2021,
ESRI 2013 & 2021,
NAIP 2021, ODOT 2021,
USGS 2013 & 2021.

State Plane
Ohio North
NAD 83

January 17, 2024

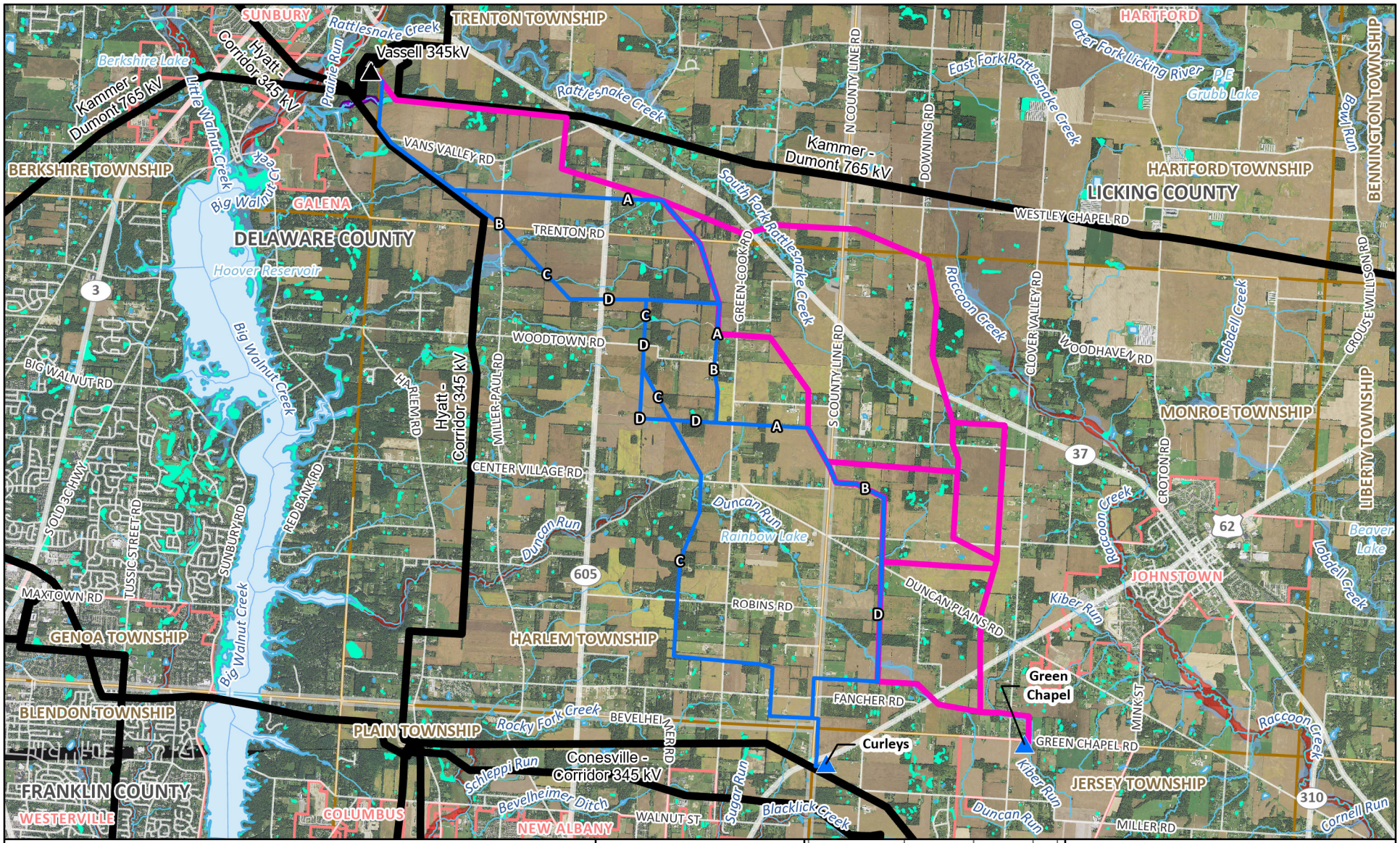


Map 4b
Alternative Routes
(Vassell - Green Chapel)

AEP OHIO TRANSMISSION COMPANY
An AEP Company
BOUNDLESS ENERGY

Vassell - Green Chapel Transmission Enhancements

0 0.75 1.5 2.25 3
Miles

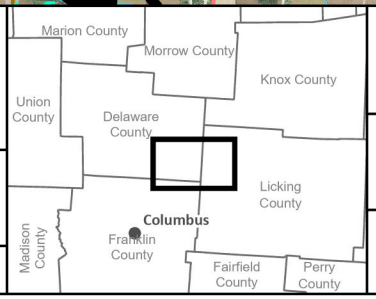


Existing Substation
Proposed Substation
Vassell - Curleys Alternative Route
Vassell - Green Chapel Alternative Route
Existing Transmission Line
NHD Stream or River
NHD Waterbody
FEMA Regulatory Floodway
FEMA 100-year Floodplain
NWI Wetland
Wetland Mitigation Area
Municipal Boundary
Township Boundary
County Boundary

Data Sources:
ESRI 2013 & 2021,
NAIP 2021, ODOT 2021,
USFWS 2021,
USGS 2013 & 2021.

State Plane
Ohio North
NAD 83

January 17, 2024

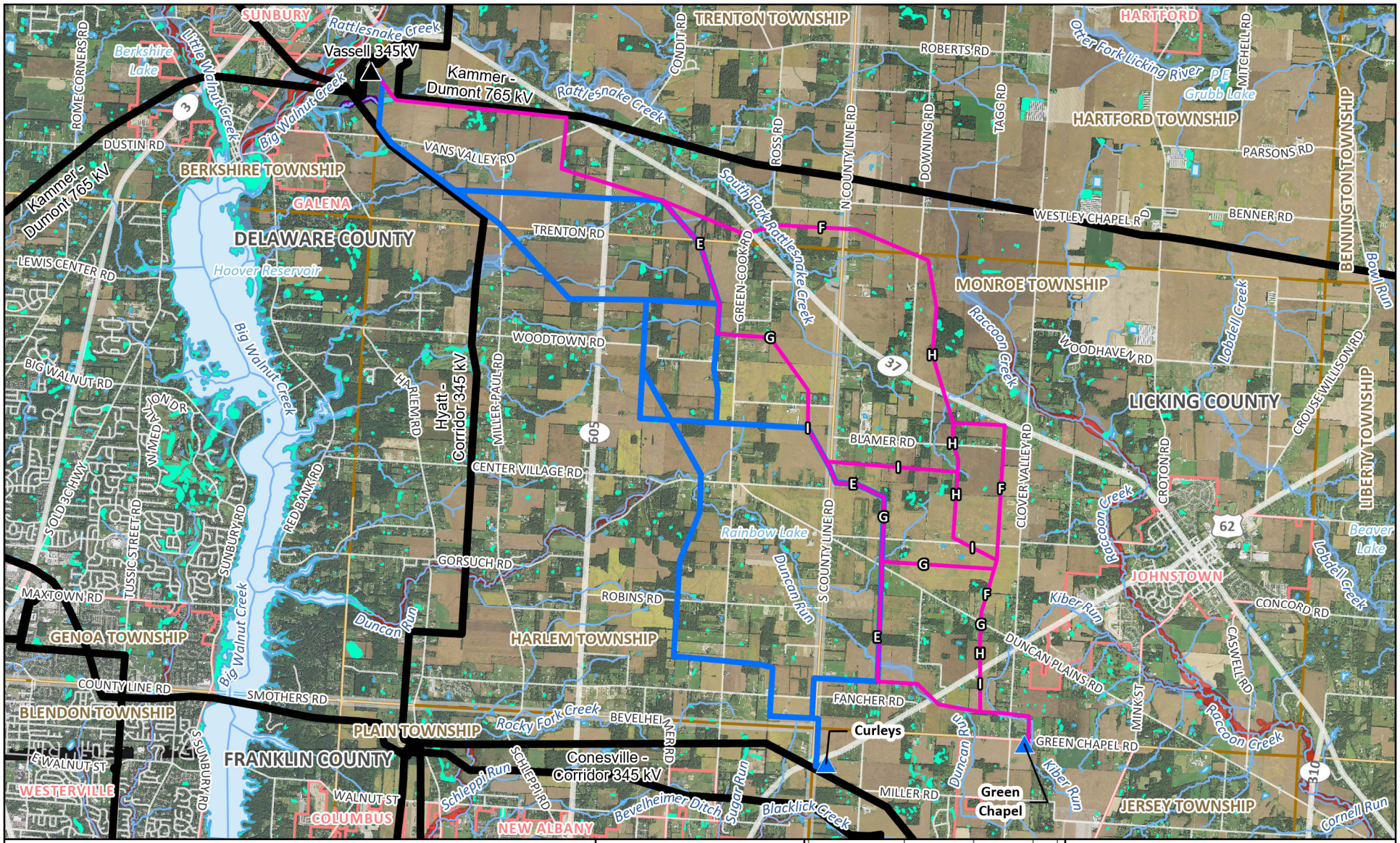


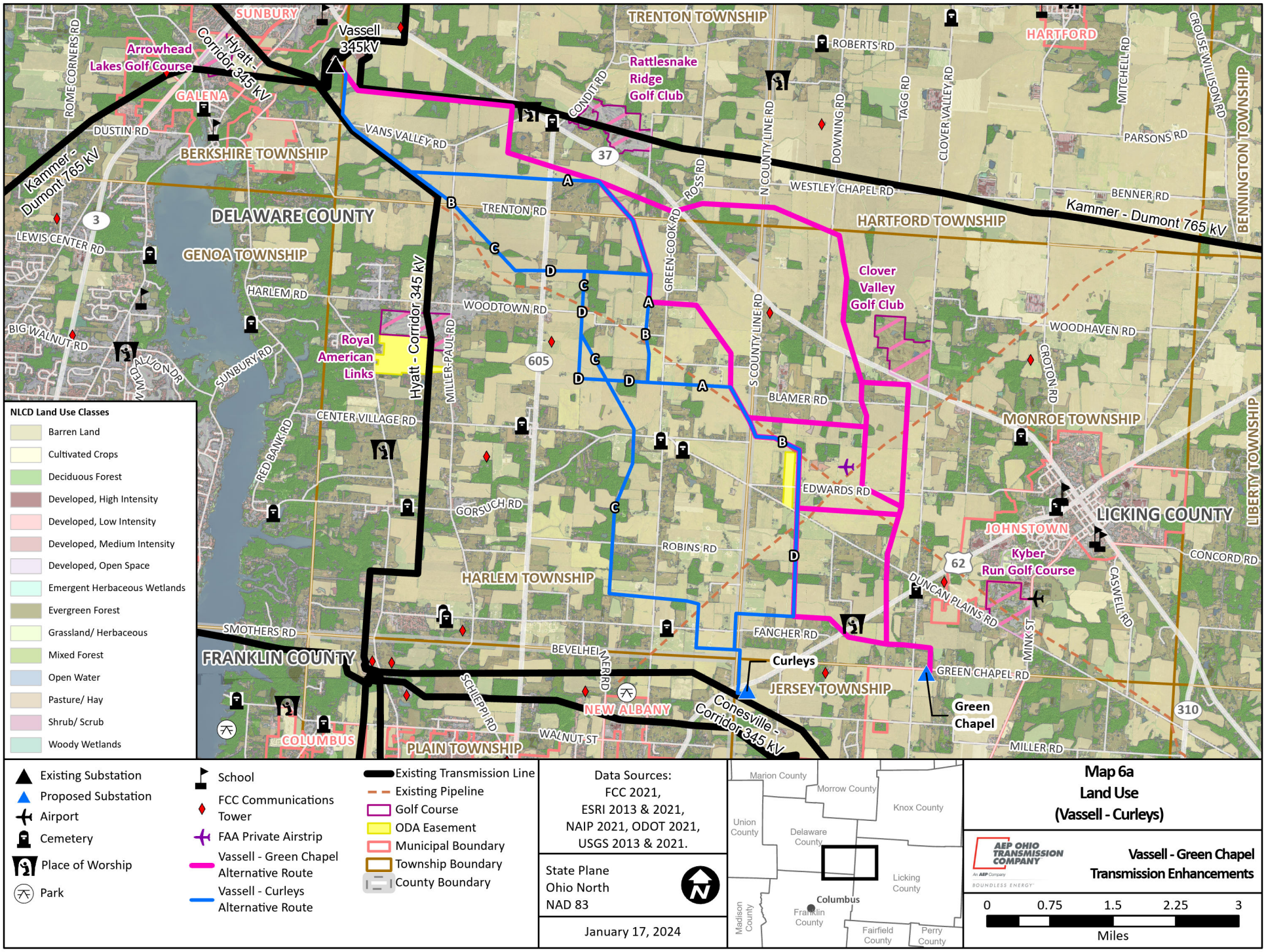
Map 5a
Natural Resources
(Vassell - Curleys)

AEP OHIO TRANSMISSION COMPANY
An AEP Company
BOUNDLESS ENERGY

Vassell - Green Chapel Transmission Enhancements

0 0.75 1.5 2.25 3
Miles


Vassell 345kV
Kammer - Dumont 765 kV
Hyatt - Corridor 345 kV
Conesville - Corridor 345 kV
Curleys
Green Chapel
SUNBURY
TRENTON TOWNSHIP
HARTFORD
HARTFORD TOWNSHIP
BERKSHIRE TOWNSHIP
GALENA
DELAWARE COUNTY
MONROE TOWNSHIP
LICKING COUNTY
BENNINGTON TOWNSHIP
LIBERTY TOWNSHIP
JOHNSTOWN
GENOA TOWNSHIP
HARLEM TOWNSHIP
BLENDON TOWNSHIP
PLAIN TOWNSHIP
FRANKLIN COUNTY
WESTERVILLE
COLUMBUS
NEW ALBANY
JERSEY TOWNSHIP
Hoover Reservoir
Rainbow Lake
Berkshire Lake
Grubb Lake
Beaver Lake
Rattlesnake Creek
Big Walnut Creek
Little Walnut Creek
Otter Fork Licking River
South Fork Rattlesnake Creek
Raccoon Creek
Lobdell Creek
Duncan Run
Kiber Run
Rocky Fork Creek
Schleppi Run
Bevelheimer Ditch
Sugar Run
Blacklick Creek
Cornell Run
Bowl Run
ROME CORNERS RD
DUSTIN RD
VANS VALLEY RD
LEWIS CENTER RD
BIG WALNUT RD
SOLDIERS & SAILORS HWY
TUSSIC STREET RD
SUNBURY RD
RED BANK RD
HARLEM RD
MILLER-PAUL RD
CENTER VILLAGE RD
GORSUCH RD
MAXTOWN RD
ROBINS RD
COUNTY LINE RD
SMOTHERS RD
E WALNUT ST
WALNUT ST
SCHLEPPI RD
BEVELHEIMER RD
FANCHER RD
MILLER RD
GREEN CHAPEL RD
DUNCAN PLAINS RD
CONCORD RD
CASWELL RD
MINK ST
CROTON RD
CROUSE MILLISON RD
WOODTOWN RD
TRENTON RD
BLAMER RD
WOODHAVEN RD
WESTLEY CHAPEL RD
BENNER RD
PARSONS RD
ROBERTS RD
MITCHELL RD
CONDIT RD
ROSS RD
N COUNTY LINE RD
DOWNING RD
TAGG RD
GREEN COOK RD
CLOVER VALLEY RD
S COUNTY LINE RD
E
F
G
H
I
Proposed Substation
Existing Substation
Vassell - Green Chapel Alternative Route
Vassell - Curleys Alternative Route
Existing Transmission Line
NHD Stream or River
NHD Waterbody
NWI Wetland
Wetland Mitigation Area
FEMA Regulatory Floodway
FEMA 100-year Floodplain
Municipal Boundary
Township Boundary
County Boundary
Data Sources:
ESRI 2013 & 2021,
NAIP 2021, ODOT 2021,
USFWS 2021,
USGS 2013 & 2021.
State Plane
Ohio North
NAD 83
January 17, 2024
Marion County
Morrow County
Knox County
Union County
Delaware County
Licking County
Madison County
Franklin County
Columbus
Fairfield County
Perry County
Map 5b
Natural Resources
(Vassell - Green Chapel)
AEP OHIO TRANSMISSION COMPANY
Vassell - Green Chapel
Transmission Enhancements
0
0.75
1.5
2.25
3
Miles


SUNBURY
Vassell 345kV
TRENTON TOWNSHIP
HARTFORD
Arrowhead Lakes Golf Course
Hyatt - Corridor 345 kV
Rattlesnake Ridge Golf Club
ROBERTS RD
ROME CORNERS RD
GALENA
DUSTIN RD
VANS VALLEY RD
BERKSHIRE TOWNSHIP
CONDIT RD
DOWNING RD
TAGG RD
CLOVER VALLEY RD
MITCHELL RD
CROUSE WILLISON RD
PARSONS RD
BENNINGTON TOWNSHIP
Kammer - Dumont 765 kV
WESTLEY CHAPEL RD
BENNER RD
ROSS RD
N COUNTY LINE RD
DELAWARE COUNTY
TRENTON RD
HARTFORD TOWNSHIP
LEWIS CENTER RD
GENOA TOWNSHIP
GREEN-COOK RD
Clover Valley Golf Club
HARLEM RD
WOODTOWN RD
WOODHAVEN RD
BIG WALNUT RD
Royal American Links
Hyatt - Corridor 345 kV
MILLER-PAUL RD
S COUNTY LINE RD
CROTON RD
SUNBURY RD
BLAMER RD
CENTER VILLAGE RD
MONROE TOWNSHIP
LIBERTY TOWNSHIP
RED BANK RD
EDWARDS RD
LICKING COUNTY
GORSUCH RD
JOHNSTOWN
Kyber Run Golf Course
ROBINS RD
CONCORD RD
HARLEM TOWNSHIP
DUNCAN PLAINS RD
CASWELL RD
SMOTHERS RD
FANCHER RD
MINK ST
FRANKLIN COUNTY
BEVELHEIMER RD
Curleys
GREEN CHAPEL RD
JERSEY TOWNSHIP
SCHLEPPI RD
NEW ALBANY
Conesville - Corridor 345 kV
Green Chapel
COLUMBUS
PLAIN TOWNSHIP
WALNUT ST
MILLER RD
NLCD Land Use Classes
Barren Land
Cultivated Crops
Deciduous Forest
Developed, High Intensity
Developed, Low Intensity
Developed, Medium Intensity
Developed, Open Space
Emergent Herbaceous Wetlands
Evergreen Forest
Grassland/ Herbaceous
Mixed Forest
Open Water
Pasture/ Hay
Shrub/ Scrub
Woody Wetlands
Existing Substation
Proposed Substation
Airport
Cemetery
Place of Worship
Park
School
FCC Communications Tower
FAA Private Airstrip
Vassell - Green Chapel Alternative Route
Vassell - Curleys Alternative Route
Existing Transmission Line
Existing Pipeline
Golf Course
ODA Easement
Municipal Boundary
Township Boundary
County Boundary
Data Sources:
FCC 2021,
ESRI 2013 & 2021,
NAIP 2021, ODOT 2021,
USGS 2013 & 2021.
State Plane
Ohio North
NAD 83
January 17, 2024
Marion County
Morrow County
Knox County
Union County
Delaware County
Licking County
Madison County
Franklin County
Columbus
Fairfield County
Perry County
Map 6a
Land Use
(Vassell - Curleys)
AEP OHIO TRANSMISSION COMPANY
Vassell - Green Chapel
Transmission Enhancements
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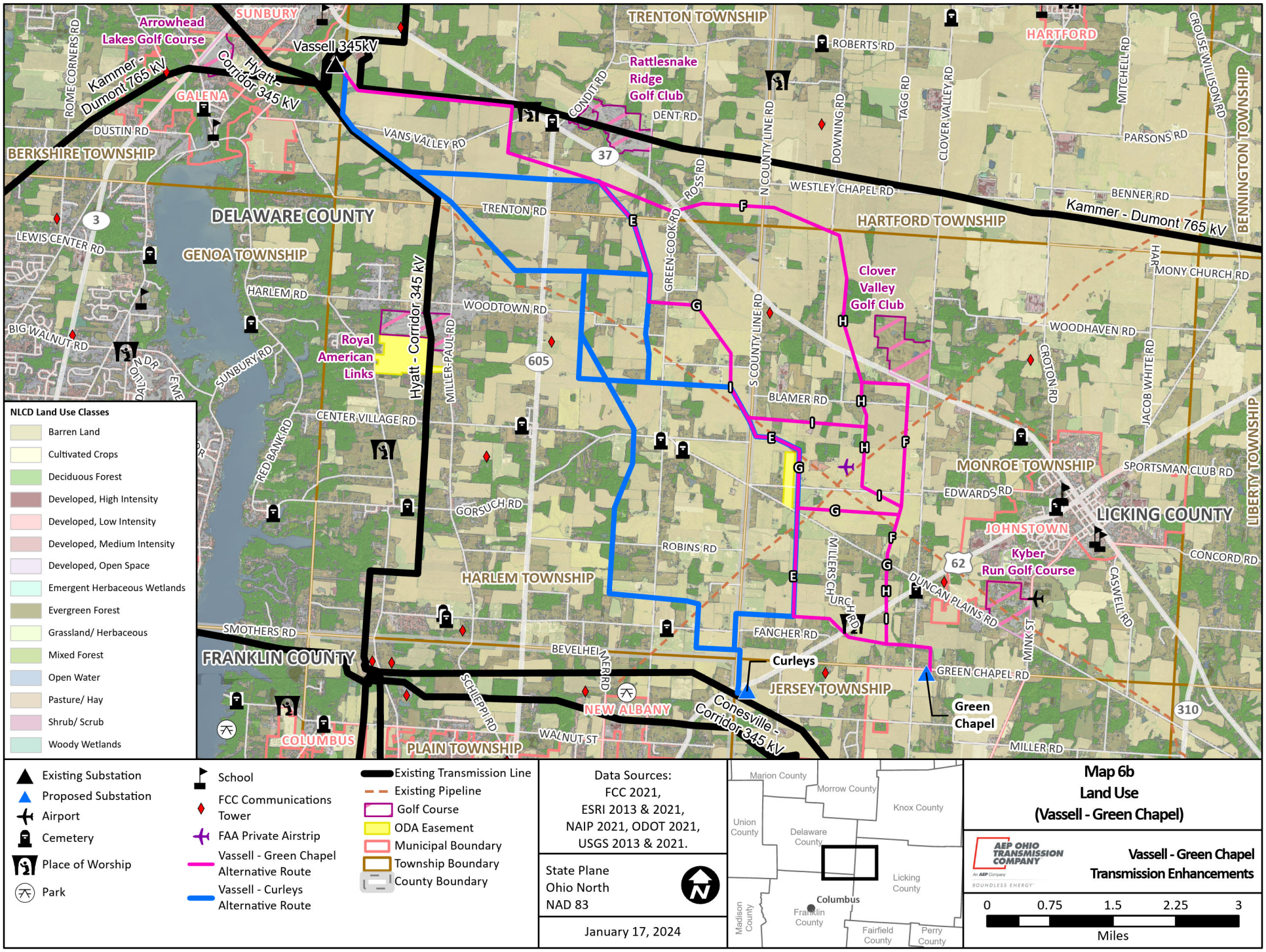
Miles


Vassell 345kV
Kammer - Dumont 765 kV
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Conesville - Corridor 345 kV
Curleys
Green Chapel
Arrowhead Lakes Golf Course
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TRENTON TOWNSHIP
HARTFORD
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DELAWARE COUNTY
GENOA TOWNSHIP
HARTFORD TOWNSHIP
BENNINGTON TOWNSHIP
MONROE TOWNSHIP
LICKING COUNTY
JOHNSTOWN
HARLEM TOWNSHIP
FRANKLIN COUNTY
JERSEY TOWNSHIP
NEW ALBANY
COLUMBUS
PLAIN TOWNSHIP
LIBERTY TOWNSHIP
GALENA
ROME CORNERS RD
DUSTIN RD
VANS VALLEY RD
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ROBERTS RD
ROSS RD
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DOWNING RD
TAGG RD
CLOVER VALLEY RD
MITCHELL RD
CROUSE WILLISON RD
PARSONS RD
WESTLEY CHAPEL RD
BENNER RD
TRENTON RD
GREEN COOK RD
LEWIS CENTER RD
HARLEM RD
WOODTOWN RD
BIG WALNUT RD
SUNBURY RD
MILLER PAUL RD
S COUNTY LINE RD
BLAMER RD
WOODHAVEN RD
CROTON RD
JACOB WHITE RD
MONY CHURCH RD
CENTER VILLAGE RD
RED BANK RD
GORSUCH RD
ROBINS RD
EDWARDS RD
SPORTSMAN CLUB RD
CONCORD RD
MILLERSCH URCH RD
DUNCAN PLAINS RD
CASWELL RD
MINK ST
SMOTHERS RD
FANCHER RD
BEVELHEIMER RD
GREEN CHAPEL RD
SCHLEPPI RD
WALNUT ST
MILLER RD
37
3
605
62
310
NLCD Land Use Classes
Barren Land
Cultivated Crops
Deciduous Forest
Developed, High Intensity
Developed, Low Intensity
Developed, Medium Intensity
Developed, Open Space
Emergent Herbaceous Wetlands
Evergreen Forest
Grassland/ Herbaceous
Mixed Forest
Open Water
Pasture/ Hay
Shrub/ Scrub
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Existing Substation
Proposed Substation
Airport
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Vassell - Green Chapel Alternative Route
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Existing Transmission Line
Existing Pipeline
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ODA Easement
Municipal Boundary
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County Boundary
Data Sources:
FCC 2021,
ESRI 2013 & 2021,
NAIP 2021, ODOT 2021,
USGS 2013 & 2021.
State Plane
Ohio North
NAD 83
January 17, 2024
Marion County
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Fairfield County
Perry County
Map 6b
Land Use
(Vassell - Green Chapel)
AEP OHIO TRANSMISSION COMPANY
Vassell - Green Chapel
Transmission Enhancements
0
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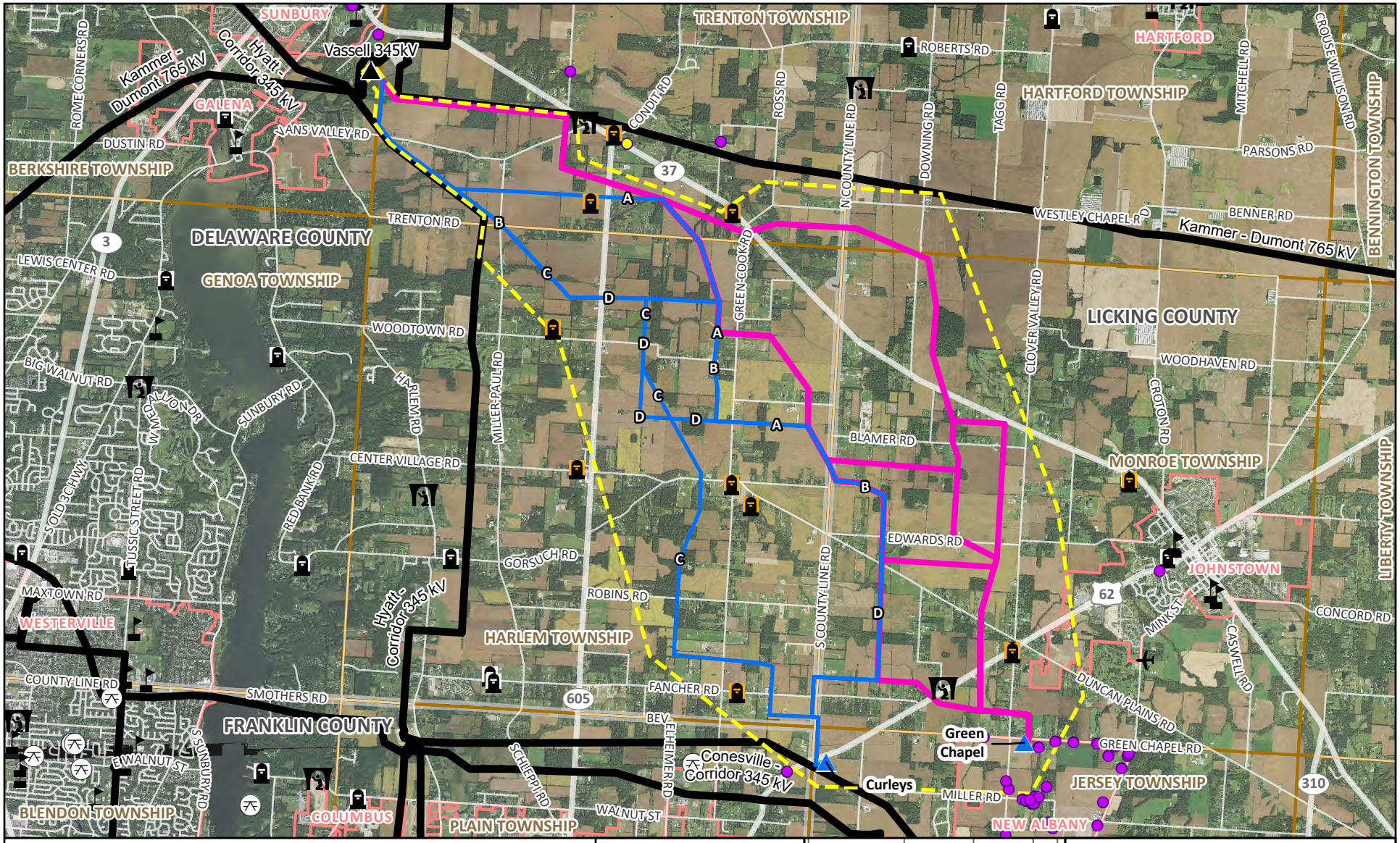
1.5
2.25
3
Miles

Case No. 24-0014-EL-BLN

Part 3 of 9

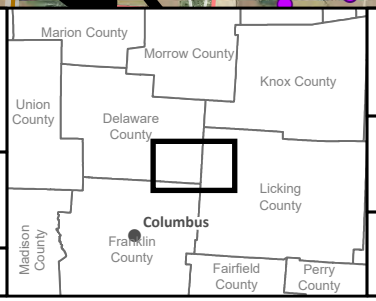


- Existing Substation
- Proposed Substation
- NRHP-Eligible Site
- NRHP-Listed Site
- Known Historic Structures
- OGS Cemeteries
- Airport
- Cemetery
- Place of Worship
- Hospital
- Park
- School
- Vassell - Curleys Alternative Route
- Vassell - Green Chapel Alternative Route
- Existing Transmission Line
- Study Area
- Municipal Boundary
- Township Boundary
- County Boundary

Data Sources:
FCC 2021,
ESRI 2013 & 2021,
NAIP 2021, ODOT 2021,
USGS 2013 & 2021.

State Plane
Ohio North
NAD 83

January 17, 2024



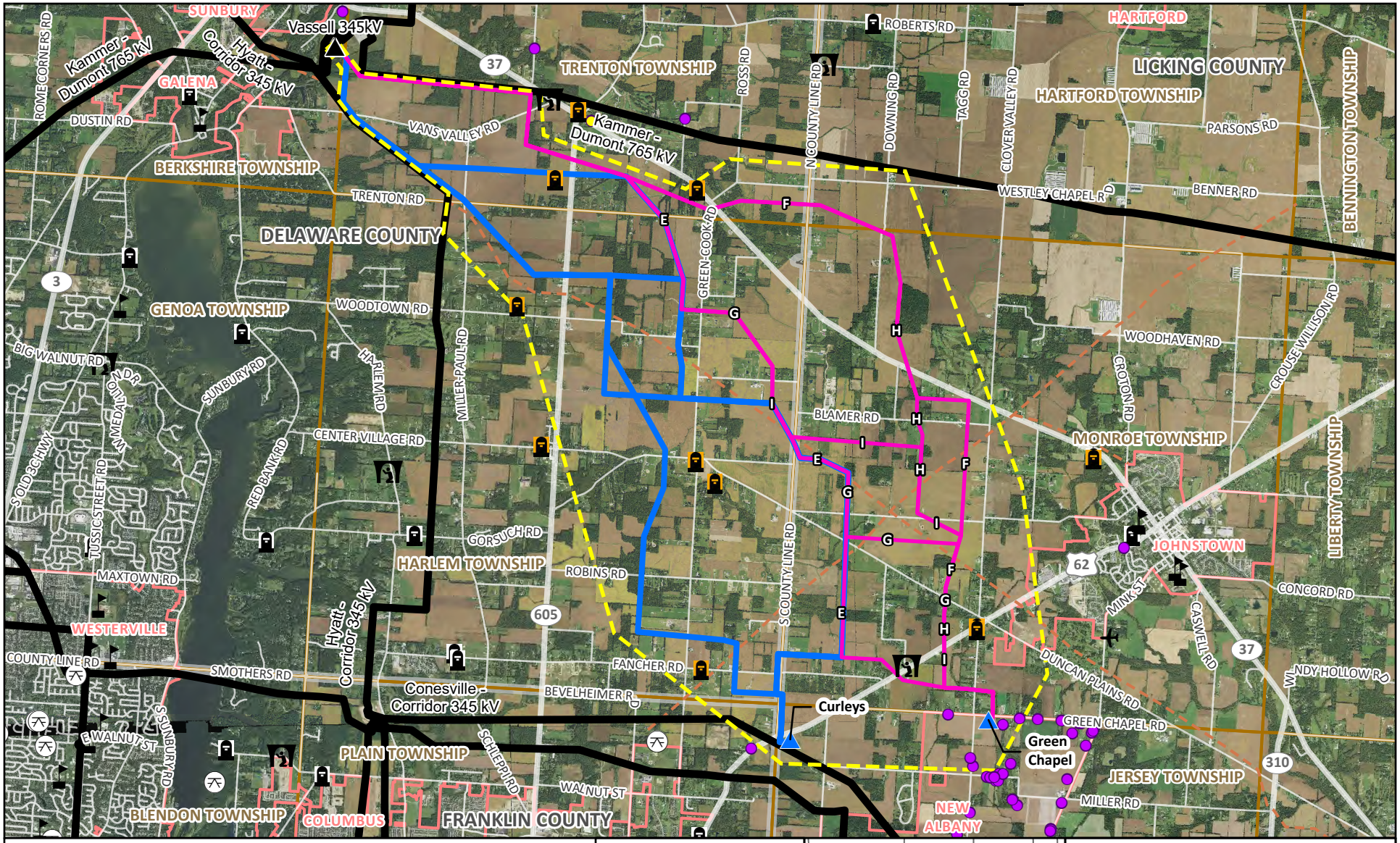
Map 7a
Cultural Resources
(Vassell - Curleys)

AEP OHIO TRANSMISSION COMPANY
An AEP Company
BOUNDLESS ENERGY

Vassell - Green Chapel Transmission Enhancements

0 0.75 1.5 2.25 3
Miles

*OGS Cemeteries were only identified for the Study Area and immediately adjacent areas

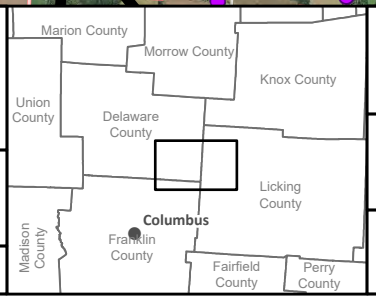


- Proposed Substation
- Existing Substation
- NRHP-Eligible Site
- NRHP-Listed Site
- Known Historic Structures
- Airport
- Cemetery
- Place of Worship
- Hospital
- Park
- School
- OGS Cemeteries
- Vassell - Green Chapel Alternative Route
- Vassell - Curleys Alternative Route
- Existing Transmission Line
- Existing Pipeline
- Study Area
- Municipal Boundary
- Township Boundary
- County Boundary

Data Sources:
FCC 2021,
ESRI 2013 & 2021,
NAIP 2021, ODOT 2021,
USGS 2013 & 2021.

State Plane
Ohio North
NAD 83

January 17, 2024



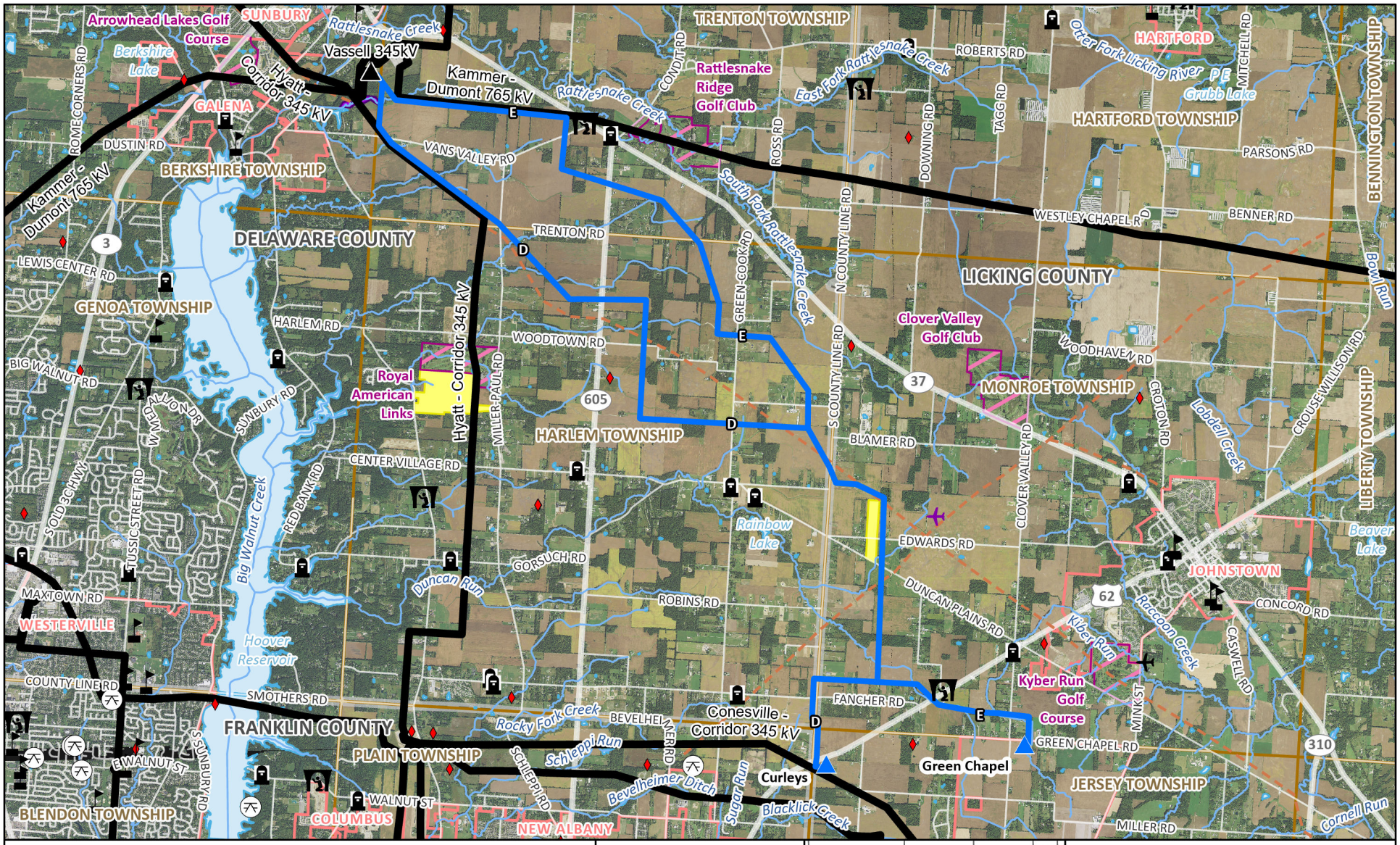
Map 7b
Cultural Resources
(Vassell - Green Chapel)

AEP OHIO TRANSMISSION COMPANY
An AEP Company
BOUNDLESS ENERGY

Vassell - Green Chapel Transmission Enhancements

0 0.75 1.5 2.25 3
Miles

*OGS Cemeteries were only identified for the Study Area and immediately adjacent areas

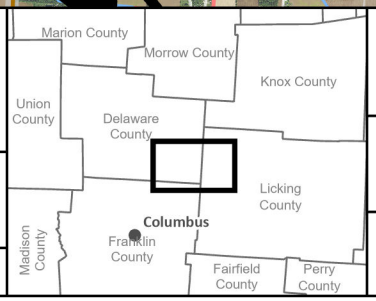


- Existing Substation
- Proposed Substation
- FAA Private Airstrip
- Airport
- Cemetery
- Place of Worship
- Park
- School
- FCC Communications Tower
- Proposed Route
- Existing Transmission Line
- Existing Pipeline
- NHD Stream or River
- NHD Waterbody
- ODA Easement
- Wetland Mitigation Area
- Golf Course
- Municipal Boundary
- Township Boundary
- County Boundary

Data Sources:
FCC 2021,
ESRI 2013 & 2021,
NAIP 2021, ODOT 2021,
USGS 2013 & 2021.

State Plane
Ohio North
NAD 83

January 17, 2024



Map 8
Proposed Routes

AEP OHIO TRANSMISSION COMPANY
An AEP Company
BOUNDLESS ENERGY

Vassell - Green Chapel Transmission Enhancements

0 0.75 1.5 2.25 3
Miles

Attachment B: GIS Data Sources

Attachment B. GIS Data Sources			
Siting Criteria	**Source**	**Opportunity (O) or Constraint (C)**	**Rationale For Siting**
Land Use			
Number of parcels and landowners crossed by the ROW	Delaware, Franklin, and Licking Counties (2022)	C	More parcels crossed increases the number of negotiations, title work, owner disruption, ROW team time, and compensation to the landowners. It is an advantage to minimize parcels crossed and landowners affected.
Residences within ROW and 250 feet of the route centerline	Microsoft "US Building Footprints" (2019); downloaded and field verified from points of public access.	C	Residences and neighborhoods experience real and perceived impacts from being close to an overhead transmission line. It can be an emotive issue, so it is prudent to minimize the number of residences close to transmission. Other effects can be the need to trim landscaping, potential aesthetic effects, and access for maintenance and construction.
Number of commercial/industrial buildings within 250 feet of the route centerline		O/C	Unless a commercial or industrial building is encroaching on the ROW, it is typically not considered a significant routing constraint. In most cases it is preferable to route through an industrial area than a residential or ecologically sensitive area. This is due to reduced potential for aesthetic impacts, already disturbed nature of the land, and more potential space in otherwise congested urban areas (large parking lots, spaces between businesses etc.).
Agricultural resources crossed by the ROW	National Land Cover Database (NLCD) (2016)	O	This data is consolidated for a broad comparison of routes during the final analysis. NLCD data is relatively coarse in resolution and does not account for individual features or structures. During construction there are impacts to agricultural operations, but they are considered temporary, and cultivation can continue after the transmission line becomes operational.
Acres of conservation easements crossed	National Conservation Easement Database (NCED) (2020)	C	Private conservation easements crossed by the routes from the NCED which is comprised of voluntarily reported conservation easement information from land trusts and public agencies. These often have development restrictions and may require additional legal, cost and schedule efforts, rending them as a potential constraint that is better avoided and minimized.

Attachment B. GIS Data Sources			
Siting Criteria	**Source**	**Opportunity (O) or Constraint (C)**	**Rationale For Siting**
Number of archaeological resources within the ROW and within 0.5 mile	Ohio State Historic Preservation Office (SHPO) (2023)	C	Previously identified archeological resources surveyed. This is not directly used to compare routes as the data is problematic for several reasons. First, by their nature, archaeological sites are only found and recorded in locations where a study was performed. Those studies are usually driven by some type of development plan such as generation, pipeline, transmission, industrial, transportation etc. A lack or recorded archaeological sites in an area does not mean they are not there. Simply that no study has been conducted. Secondly, if archaeological sites are found, they are disturbed only at pole locations, making them typically avoidable.
Number of historic architectural resources, historic places, and historic districts within the ROW and within one mile	National Register of Historic Places (NRHP) (2019) and SHPO (2023)	C	Previously identified historic architectural resource sites and districts listed or eligible on the NRHP or included in the Indiana Historic Architectural and Archaeological Research Database.
Institutional uses (schools, places of worship and cemeteries) within 500 feet of the route centerline	U.S. Geological Survey (USGS) Geographic Names Information System (GNIS) (2021) and field verified from points of public access.	C	Emotive public opinion issue.
Airfield and heliports within ne mile of the route centerline	GNIS (2021) and the Federal Aviation Administration	C	Building within the FAA obstruction buffer requires permits/agreements and adds to overall Project cost and schedule.

Attachment B. GIS Data Sources			
Siting Criteria	**Source**	**Opportunity (O) or Constraint (C)**	**Rationale For Siting**
	(FAA) database (2020)		
Natural Resources			
ROW Tree Clearing/Forestry Resources in the ROW	USGS Woodland Coverage (2019); verified with current aerial imagery and field observations from points of public access.	C	Tree clearing is a potential T&E habitat issue and may be restricted to clearing periods based on sensitive life stages. Otherwise, tree clearing adds to overall cost of the Project. Wooded areas along streams are also considered riparian habitat and are typically sensitive.
Streams and waterbodies crossed	USGS National Hydrology Dataset (NHD) (2021)	C	The NHD is a comprehensive set of digital spatial data prepared by the USGS that contains information about surface water features such as lakes, ponds, streams, rivers, springs, and wells. Streams and waterbodies can present potential access issues. For transmission line projects, direct impacts to streams and waterbodies are not typical because the resources can be spanned.
Wetlands within the ROW	U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) (2021)	C	The NWI produces information on the characteristics, extent, and status of the Nation's wetlands and deepwater habitats. Variety of wetland impacts require different USACE and/or State permits, adding to overall Project schedule and cost.
Acres of 100-year floodplain and regulatory floodway within the ROW	National Flood Hazard Layer (NFHL) (FEMA) (2019)	C	Floodplain permitting and floodway modeling generally add to overall Project schedule and cost.

Attachment B. GIS Data Sources			
Siting Criteria	**Source**	**Opportunity (O) or Constraint (C)**	**Rationale For Siting**
Miles of public lands crossed by the route	The Protected Areas Database of the United States (PAD-US) (2021)	C	Crossing public lands triggers NEPA or state equivalent, adding to overall Project and cost.
Predominantly Hydric or Hydric Soil Mapping Units in the ROW	USDA-NRCS SSURGO Database (2019)	C	NRCS soil mapping units containing 66-100% hydric components provide a broad overview to potentially poorly drained areas or un-inventoried (USFWS) wetlands.
Technical			
Route length	Measured in GIS	C	Project costs increase in correlation to length.
Number and severity of angled structures	Developed in GIS	C	Heavy angles require more expensive structures. Overall, fewer angle structures are better.
Number of road crossings	Ohio Department of Transportation (ODOT) (2022)	C	Permits/agreements add to project cost and schedule.
Number of pipeline crossings	U.S. Department of Transportation National Pipeline Mapping System (2021)	C	Potential engineering requirements for crossings.
Number of transmission line crossings	AEP Transco (2017)	C	
Length of transmission line parallel	AEP Transco (2017)	O	Existing corridors are favorable to ecological agencies and nearby landowners due to aesthetic advantages.
Length of road parallel	ODOT (2022)	O/C	Local roads are typically residential and vegetated, even in rural areas. Still, existing corridors may be unfavorable to adjacent or nearby landowners and can also conflict with existing aboveground and underground utilities, bridges, and building clearances.

Attachment C: Agency Correspondence

Office of Real Estate
Tara Paciorek, Chief
2045 Morse Road – Bldg. E-2
Columbus, OH 43229
Phone: (614) 265-6661
Fax: (614) 267-4764

October 13, 2023

Anna Findish
AECOM
707 Grant Street
Pittsburgh, Pennsylvania 15219

Re: 23-1066; AEP Vassell - Green Chapel North Enhancement

Project: The proposed project involves the implementation of improvements between the existing Vassell Station and a proposed station (approximately 12.4 miles).

Location: The proposed project is located in Berkshire, Trenton, and Harlem townships, Delaware County, and Monroe and Jersey townships, Licking County, Ohio.

The Ohio Department of Natural Resources (ODNR) has completed a review of the above referenced project. These comments were generated by an inter-disciplinary review within the Department. These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the National Environmental Policy Act, the Coastal Zone Management Act, Ohio Revised Code and other applicable laws and regulations. These comments are also based on ODNR's experience as the state natural resource management agency and do not supersede or replace the regulatory authority of any local, state, or federal agency nor relieve the applicant of the obligation to comply with any local, state, or federal laws or regulations.

Natural Heritage Database: A review of the Ohio Natural Heritage Database indicates there are no records of state or federally listed plants or animals within one mile of the specified project area. Records searched date from 1980.

Please note that Ohio has not been completely surveyed and we rely on receiving information from many sources. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area.

Fish and Wildlife: The Division of Wildlife (DOW) has the following comments.

The DOW recommends that impacts to streams, wetlands and other water resources be avoided and minimized to the fullest extent possible, and that Best Management Practices be utilized to minimize erosion and sedimentation.

The portion of the project south of Duncan Plains Road is within the vicinity of records for the northern long-eared bat (*Myotis septentrionalis*), a state endangered and federally endangered species. Because presence of state endangered bat species has been established in this area, summer tree cutting is not recommended, and additional summer surveys would not constitute presence/absence in the area. However, limited summer tree cutting inside this buffer may be

acceptable after further consultation with DOW (contact Eileen Wyza at Eileen.Wyza@dnr.ohio.gov).

In addition, the entire state of Ohio is within the range of the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species, the northern long-eared bat (*Myotis septentrionalis*), a state endangered and federally endangered species, the little brown bat (*Myotis lucifugus*), a state endangered species, and the tricolored bat (*Perimyotis subflavus*), a state endangered species. During the spring and summer (April 1 through September 30), these bat species predominately roost in trees behind loose, exfoliating bark, in crevices and cavities, or in the leaves. The DOW recommends tree cutting only occur from October 1 through March 31, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with DBH ≥ 20 if possible. However, if trees are present within this area, (outside of the area delineated above) and trees must be cut during the summer months, the DOW recommends a mist net survey or acoustic survey be conducted from June 1 through August 15, prior to any cutting. Mist net and acoustic surveys should be conducted in accordance with the most recent version of the "*OHIO DIVISION OF WILDLIFE GUIDANCE FOR BAT SURVEYS AND TREE CLEARING*". If state listed bats are documented, DOW recommends cutting only occur from October 1 through March 31. However, limited summer tree cutting may be acceptable after consultation with the DOW.

The DOW also recommends that a desktop habitat assessment is conducted, followed by a field assessment if needed, to determine if a potential hibernaculum is present within the project area. Direction on how to conduct habitat assessments can be found in the current USFWS "*RANGE-WIDE INDIANA BAT & NORTHERN LONG-EARED BAT SURVEY GUIDELINES*." If a habitat assessment finds that a potential hibernaculum is present within 0.25 miles of the project area, please send this information to Eileen Wyza, for project recommendations. If a potential or known hibernaculum is found, the DOW recommends a 0.25-mile tree cutting and subsurface disturbance buffer around the hibernaculum entrance, however, limited summer or winter tree cutting may be acceptable after consultation with the DOW. If no tree cutting or subsurface impacts to a hibernaculum are proposed, this project is not likely to impact these species.

This project is within the range of the following listed mussel species.
Federally Endangered
rayed bean (*Villosa fabalis*)
snuffbox (*Epioblasma triquetra*)

Federally Threatened
rabbitsfoot (*Quadrula cylindrica cylindrica*)

State Threatened
Salamander Mussel (*Simpsonaias ambigua*)
pondhorn (*Uniomerus tetralasmus*)

This project must not have an impact on native mussels. This applies to both listed and non-listed species, as all species of mussel are protected in Ohio. Per the Ohio Mussel Survey Protocol (2022), all Group 2, 3, and 4 streams (Appendix A) require a mussel survey. Per the Ohio Mussel Survey Protocol, Group 1 streams (Appendix A) and unlisted streams with a watershed of 5 square miles or larger above the point of impact should be assessed using the Reconnaissance Survey for Unionid Mussels (Appendix B) to determine if mussels are present. Mussel surveys may be recommended for these streams as well. Therefore, if in-water work is planned in any stream that meets any of the above criteria, the DOW recommends the applicant provide

information to indicate no mussel impacts will occur. If this is not possible, the DOW recommends a professional malacologist conduct a mussel survey in the project area. If mussels that cannot be avoided are found in the project area, the DOW recommends a professional malacologist collect and relocate the mussels to suitable and similar habitat upstream of the project site. Mussel surveys and any subsequent mussel relocation should be done in accordance with the Ohio Mussel Survey Protocol. If there is no in-water work proposed, impacts to mussels are not likely.

The DOW recommends no in-water work in perennial streams from March 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed in a perennial stream, this project is not likely to impact aquatic species.

The project is within the range of the northern harrier (*Circus hudsonius*), a state endangered bird. This is a common migrant and winter species. Nesters are much rarer, although they occasionally breed in large marshes and grasslands. Harriers often nest in loose colonies. The female builds a nest out of sticks on the ground, often on top of a mound. Harriers hunt over grasslands. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 15 through July 31. If this habitat will not be impacted, this project is not likely to impact this species.

Due to the potential of impacts to federally listed species, as well as to state listed species, we recommend that this project be coordinated with the US Fish & Wildlife Service.

Water Resources: The Division of Water Resources has the following comment.

The local floodplain administrator should be contacted concerning the possible need for any floodplain permits or approvals for this project.

ODNR appreciates the opportunity to provide these comments. Please contact Mike Pettegrew at mike.pettegrew@dnr.ohio.gov if you have questions about these comments or need additional information.

Mike Pettegrew
Environmental Services Administrator

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
4625 Morse Road, Suite 104
Columbus, Ohio 43230
(614) 416-8993 / FAX (614) 416-8994

September 11, 2023

Project Code: 2023-0125820

Dear Anna Findish:

The U.S. Fish and Wildlife Service (Service) has received your recent correspondence requesting information about the subject proposal. We offer the following comments and recommendations to assist you in minimizing and avoiding adverse impacts to threatened, endangered, and proposed species pursuant to the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq), as amended (ESA).

Federally Threatened and Endangered Species: The endangered Indiana bat (*Myotis sodalis*) and northern long-eared bat (*Myotis septentrionalis*) occur throughout the State of Ohio. The Indiana bat and northern long-eared bat may be found wherever suitable habitat occurs unless a presence/absence survey has been performed to document absence. Suitable summer habitat for Indiana bats and northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and breed that may also include adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, woodlots, fallow fields, and pastures. Roost trees for both species include live and standing dead trees ≥3 inches diameter at breast height (dbh) that have any exfoliating bark, cracks, crevices, hollows and/or cavities. These roost trees may be located in forested habitats as well as linear features such as fencerows, riparian forests, and other wooded corridors. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet of other forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat. In the winter, Indiana bats and northern long-eared bats hibernate in caves, rock crevices and abandoned mines.

Federally Proposed Species: On September 14, 2022, the Service proposed to list the tricolored bat (*Perimyotis subflavus*) as endangered under the ESA. The bat faces extinction due to the impacts of white-nose syndrome, a deadly disease affecting cave-dwelling bats across the continent. During spring, summer, and fall, this species roosts primarily among leaf clusters of live or recently dead trees, emerging at dusk to hunt for insects over waterways and forest edges. While white-nose syndrome is by far the most serious threat to the tricolored bat, other threats now have an increased significance due to the dramatic decline in the species' population. These threats include disturbance to bats in roosting, foraging, commuting, and over-wintering habitats. Mortality due to collision with wind turbines, especially during migration, has also been documented across their range. Conservation measures for the Indiana bat and northern long-eared bat will also help to conserve the tricolored bat.

Seasonal Tree Clearing for Federally Listed Bat Species: Should the proposed project site contain trees ≥3 inches dbh, we recommend avoiding tree removal wherever possible. If any caves or abandoned mines may be disturbed, further coordination with this office is requested to determine if fall or spring portal surveys are warranted. If no caves or abandoned mines are present and trees ≥3 inches dbh cannot be avoided, we recommend removal of any trees ≥3 inches dbh only occur between October 1 and March 31. Seasonal clearing is recommended to avoid adverse effects to Indiana bats and northern long-eared bats.

If implementation of this seasonal tree cutting recommendation is not possible, a summer presence/absence survey may be conducted for Indiana bats and northern long-eared bats. If Indiana bats and northern long-eared bats are not detected during the survey, then tree clearing may occur at any time of the year. Surveys must be conducted by an approved surveyor and be designed and conducted in coordination with the Ohio Field Office. Surveyors must have a valid federal permit. Please note that in Ohio summer mist net surveys may only be conducted between June 1 and August 15.

Section 7 Coordination: If there is a federal nexus for the project (e.g., federal funding provided, federal permits required to construct), then no tree clearing should occur on any portion of the project area until consultation under section 7 of the ESA, between the Service and the federal action agency, is completed. We recommend the federal action agency submit a determination of effects to this office, relative to the Indiana bat and northern long-eared bat, for our review and concurrence. This letter provides technical assistance only and does not serve as a completed section 7 consultation document.

Stream and Wetland Avoidance: Over 90% of the wetlands in Ohio have been drained, filled, or modified by human activities, thus is it important to conserve the functions and values of the remaining wetlands in Ohio (https://epa.ohio.gov/portals/47/facts/ohio_wetlands.pdf). We recommend avoiding and minimizing project impacts to all wetland habitats (e.g., forests, streams, vernal pools) to the maximum extent possible in order to benefit water quality and fish and wildlife habitat. Additionally, natural buffers around streams and wetlands should be preserved to enhance beneficial functions. If streams or wetlands will be impacted, the U.S. Army Corps of Engineers should be contacted to determine whether a Clean Water Act section 404 permit is required. Best management practices should be used to minimize erosion, especially on slopes. Disturbed areas should be mulched and revegetated with native plant species. In addition, prevention of non-native, invasive plant establishment is critical in maintaining high quality habitats.

Due to the project type, size, and location, we do not anticipate adverse effects to any other federally endangered, threatened, or proposed species, or proposed or designated critical habitat. Should the project design change, or additional information on listed or proposed species or their critical habitat become available, or if new information reveals effects of the action that were not previously considered, coordination with the Service should be initiated to assess any potential impacts.

Thank you for your efforts to conserve listed species and sensitive habitats in Ohio. We recommend coordinating with the Ohio Department of Natural Resources due to the potential for the proposed project to affect state listed species and/or state lands. Contact Mike Pettegrew, Environmental Services Administrator, at (614) 265-6387 or at mike.pettegrew@dnr.ohio.gov.

If you have questions, or if we can be of further assistance in this matter, please contact our office at (614) 416-8993 or ohio@fws.gov.

Sincerely,



Scott Hicks
Acting Field Office Supervisor

cc: Nathan Reardon, ODNR-DOW
Eileen Wyza, ODNR-DOW

Appendix E Agency Coordination

In reply, refer to
2023-DEL-59893

January 8, 2024

Ryan Weller
Weller & Associates, Inc.
1395 W. Fifth Ave.
Columbus, OH 43212
rweller@wellercrm.com

RE: Vassell-Green Chapel 345kV North Transmission Line Greenfield Project, Delaware and Licking Counties, Ohio

Dear Mr. Weller:

This letter is in response to the correspondence received December 11, 2023 regarding the proposed Vassell-Green Chapel 345kV North Transmission Line Greenfield Project, Delaware and Licking Counties, Ohio. We appreciate the opportunity to comment on this project. The comments of the Ohio State Historic Preservation Office (SHPO) are made pursuant to Section 149.53 of the Ohio Revised Code and the Ohio Power Siting Board rules for siting this project (OAC 4906-4 & 4906-5). The comments of the Ohio SHPO are also submitted in accordance with the provisions of Section 106 of the National Historic Preservation Act of 1966, as amended (54 U.S.C. 306108 [36 CFR 800]).

The following comments pertain to the *Phase I Archaeological Investigation for the 20.2 km (12.6 mi) Vassell-Green Chapel 345kV North Transmission Line Greenfield Project in Delaware and Licking County, Ohio* by Ryan J. Weller (Weller & Associates, Inc. 2023).

A literature review, visual inspection, surface collection, shovel probe, and shovel test unit excavation was completed as part of the investigations. Ten (10) previously identified archaeological sites are located within the project area, Ohio Archaeological Inventory (OAI) #33DL2618-33DL2620, 33DL2630, 33DL2632, 33DL2691, 33DL2712-33DL2714, and 33LI3550. OAI#33DL2618 was previously recommended potentially eligible for listing in the National Register of Historic Places (NRHP). Intensive survey in and around this site during this survey failed to identify the site. The reminder of the previously identified archaeological sites were previously determined not eligible for listing in the NRHP. Our office agrees with this recommendation and no additional survey is needed at OAI#33DL2618. Twenty-six (26) new archaeological sites were identified during survey, OAI#33DL3695-3703, 33LI3608, 33LI3610-33LI3612, and 33LI3615-33LI3627. None of the sites are recommended eligible for listing in the NRHP. Our office agrees with this recommendation and no additional archaeological survey.

The following comments pertain to the *History/Architecture Investigations for the 20.2 km (12.6 mi) Vassell-Green Chapel 345kV North Transmission Line Greenfield Project in Delaware and Licking Counties, Ohio* by Scott McIntosh (Weller & Associates, Inc. 2023).

A literature review and field survey were conducted as part of the investigations. A total of forty-nine (49) architectural resources fifty years of age or older were identified in the Area of Potential Effects (APE). One (1) resource was previously determined eligible under Criterion C and was recorded to the Ohio Historic Inventory (OHI) as part of this survey (DEL0122813). None of the other resources are recommended eligible. Our office agrees with Weller's recommendations of eligibility. Based on the information provided, the project as proposed will have no direct effect on the historic resource.

Based on the information provided, we agree the project as proposed will have no adverse effect on historic properties. No further coordination with this office is necessary, unless the project changes or unless new or additional historic properties are discovered during implementation of this project. In such a situation, this office should be contacted. If you have any questions, please contact me at (614) 298-2022, or by e-mail at khorrocks@ohiohistory.org or Joy Williams at jwilliams@ohiohistory.org. Thank you for your cooperation.

Sincerely,

Krista Horrocks, Project Reviews Manager
Resource Protection and Review

RPR Serial No: 1100944-1100945

Office of Real Estate
Tara Paciorek, Chief
2045 Morse Road – Bldg. E-2
Columbus, OH 43229
Phone: (614) 265-6661
Fax: (614) 267-4764

October 13, 2023

Anna Findish
AECOM
707 Grant Street
Pittsburgh, Pennsylvania 15219

Re: 23-1066; AEP Vassell - Green Chapel North Enhancement

Project: The proposed project involves the implementation of improvements between the existing Vassell Station and a proposed station (approximately 12.4 miles).

Location: The proposed project is located in Berkshire, Trenton, and Harlem townships, Delaware County, and Monroe and Jersey townships, Licking County, Ohio.

The Ohio Department of Natural Resources (ODNR) has completed a review of the above referenced project. These comments were generated by an inter-disciplinary review within the Department. These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the National Environmental Policy Act, the Coastal Zone Management Act, Ohio Revised Code and other applicable laws and regulations. These comments are also based on ODNR's experience as the state natural resource management agency and do not supersede or replace the regulatory authority of any local, state, or federal agency nor relieve the applicant of the obligation to comply with any local, state, or federal laws or regulations.

Natural Heritage Database: A review of the Ohio Natural Heritage Database indicates there are no records of state or federally listed plants or animals within one mile of the specified project area. Records searched date from 1980.

Please note that Ohio has not been completely surveyed and we rely on receiving information from many sources. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area.

Fish and Wildlife: The Division of Wildlife (DOW) has the following comments.

The DOW recommends that impacts to streams, wetlands and other water resources be avoided and minimized to the fullest extent possible, and that Best Management Practices be utilized to minimize erosion and sedimentation.

The portion of the project south of Duncan Plains Road is within the vicinity of records for the northern long-eared bat (*Myotis septentrionalis*), a state endangered and federally endangered species. Because presence of state endangered bat species has been established in this area, summer tree cutting is not recommended, and additional summer surveys would not constitute presence/absence in the area. However, limited summer tree cutting inside this buffer may be

acceptable after further consultation with DOW (contact Eileen Wyza at Eileen.Wyza@dnr.ohio.gov).

In addition, the entire state of Ohio is within the range of the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species, the northern long-eared bat (*Myotis septentrionalis*), a state endangered and federally endangered species, the little brown bat (*Myotis lucifugus*), a state endangered species, and the tricolored bat (*Perimyotis subflavus*), a state endangered species. During the spring and summer (April 1 through September 30), these bat species predominately roost in trees behind loose, exfoliating bark, in crevices and cavities, or in the leaves. The DOW recommends tree cutting only occur from October 1 through March 31, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with DBH ≥ 20 if possible. However, if trees are present within this area, (outside of the area delineated above) and trees must be cut during the summer months, the DOW recommends a mist net survey or acoustic survey be conducted from June 1 through August 15, prior to any cutting. Mist net and acoustic surveys should be conducted in accordance with the most recent version of the "*OHIO DIVISION OF WILDLIFE GUIDANCE FOR BAT SURVEYS AND TREE CLEARING*". If state listed bats are documented, DOW recommends cutting only occur from October 1 through March 31. However, limited summer tree cutting may be acceptable after consultation with the DOW.

The DOW also recommends that a desktop habitat assessment is conducted, followed by a field assessment if needed, to determine if a potential hibernaculum is present within the project area. Direction on how to conduct habitat assessments can be found in the current USFWS "*RANGE-WIDE INDIANA BAT & NORTHERN LONG-EARED BAT SURVEY GUIDELINES*." If a habitat assessment finds that a potential hibernaculum is present within 0.25 miles of the project area, please send this information to Eileen Wyza, for project recommendations. If a potential or known hibernaculum is found, the DOW recommends a 0.25-mile tree cutting and subsurface disturbance buffer around the hibernaculum entrance, however, limited summer or winter tree cutting may be acceptable after consultation with the DOW. If no tree cutting or subsurface impacts to a hibernaculum are proposed, this project is not likely to impact these species.

This project is within the range of the following listed mussel species.
Federally Endangered
rayed bean (*Villosa fabalis*)
snuffbox (*Epioblasma triquetra*)

Federally Threatened
rabbitsfoot (*Quadrula cylindrica cylindrica*)

State Threatened
Salamander Mussel (*Simpsonaias ambigua*)
pondhorn (*Uniomerus tetralasmus*)

This project must not have an impact on native mussels. This applies to both listed and non-listed species, as all species of mussel are protected in Ohio. Per the Ohio Mussel Survey Protocol (2022), all Group 2, 3, and 4 streams (Appendix A) require a mussel survey. Per the Ohio Mussel Survey Protocol, Group 1 streams (Appendix A) and unlisted streams with a watershed of 5 square miles or larger above the point of impact should be assessed using the Reconnaissance Survey for Unionid Mussels (Appendix B) to determine if mussels are present. Mussel surveys may be recommended for these streams as well. Therefore, if in-water work is planned in any stream that meets any of the above criteria, the DOW recommends the applicant provide

information to indicate no mussel impacts will occur. If this is not possible, the DOW recommends a professional malacologist conduct a mussel survey in the project area. If mussels that cannot be avoided are found in the project area, the DOW recommends a professional malacologist collect and relocate the mussels to suitable and similar habitat upstream of the project site. Mussel surveys and any subsequent mussel relocation should be done in accordance with the Ohio Mussel Survey Protocol. If there is no in-water work proposed, impacts to mussels are not likely.

The DOW recommends no in-water work in perennial streams from March 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed in a perennial stream, this project is not likely to impact aquatic species.

The project is within the range of the northern harrier (*Circus hudsonius*), a state endangered bird. This is a common migrant and winter species. Nesters are much rarer, although they occasionally breed in large marshes and grasslands. Harriers often nest in loose colonies. The female builds a nest out of sticks on the ground, often on top of a mound. Harriers hunt over grasslands. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 15 through July 31. If this habitat will not be impacted, this project is not likely to impact this species.

Due to the potential of impacts to federally listed species, as well as to state listed species, we recommend that this project be coordinated with the US Fish & Wildlife Service.

Water Resources: The Division of Water Resources has the following comment.

The local floodplain administrator should be contacted concerning the possible need for any floodplain permits or approvals for this project.

ODNR appreciates the opportunity to provide these comments. Please contact Mike Pettegrew at mike.pettegrew@dnr.ohio.gov if you have questions about these comments or need additional information.

Mike Pettegrew
Environmental Services Administrator

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
4625 Morse Road, Suite 104
Columbus, Ohio 43230
(614) 416-8993 / FAX (614) 416-8994

September 11, 2023

Project Code: 2023-0125820

Dear Anna Findish:

The U.S. Fish and Wildlife Service (Service) has received your recent correspondence requesting information about the subject proposal. We offer the following comments and recommendations to assist you in minimizing and avoiding adverse impacts to threatened, endangered, and proposed species pursuant to the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq), as amended (ESA).

Federally Threatened and Endangered Species: The endangered Indiana bat (*Myotis sodalis*) and northern long-eared bat (*Myotis septentrionalis*) occur throughout the State of Ohio. The Indiana bat and northern long-eared bat may be found wherever suitable habitat occurs unless a presence/absence survey has been performed to document absence. Suitable summer habitat for Indiana bats and northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and breed that may also include adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, woodlots, fallow fields, and pastures. Roost trees for both species include live and standing dead trees ≥3 inches diameter at breast height (dbh) that have any exfoliating bark, cracks, crevices, hollows and/or cavities. These roost trees may be located in forested habitats as well as linear features such as fencerows, riparian forests, and other wooded corridors. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet of other forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat. In the winter, Indiana bats and northern long-eared bats hibernate in caves, rock crevices and abandoned mines.

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Section 7 Coordination: If there is a federal nexus for the project (e.g., federal funding provided, federal permits required to construct), then no tree clearing should occur on any portion of the project area until consultation under section 7 of the ESA, between the Service and the federal action agency, is completed. We recommend the federal action agency submit a determination of effects to this office, relative to the Indiana bat and northern long-eared bat, for our review and concurrence. This letter provides technical assistance only and does not serve as a completed section 7 consultation document.

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Due to the project type, size, and location, we do not anticipate adverse effects to any other federally endangered, threatened, or proposed species, or proposed or designated critical habitat. Should the project design change, or additional information on listed or proposed species or their critical habitat become available, or if new information reveals effects of the action that were not previously considered, coordination with the Service should be initiated to assess any potential impacts.

Thank you for your efforts to conserve listed species and sensitive habitats in Ohio. We recommend coordinating with the Ohio Department of Natural Resources due to the potential for the proposed project to affect state listed species and/or state lands. Contact Mike Pettegrew, Environmental Services Administrator, at (614) 265-6387 or at mike.pettegrew@dnr.ohio.gov.

If you have questions, or if we can be of further assistance in this matter, please contact our office at (614) 416-8993 or ohio@fws.gov.

Sincerely,



Scott Hicks
Acting Field Office Supervisor

cc: Nathan Reardon, ODNR-DOW
Eileen Wyza, ODNR-DOW

Appendix F Wetland Delineation Report

VASSELL – GREEN CHAPEL NORTH PROJECT

DELAWARE AND LICKING COUNTY, OHIO

ECOLOGICAL REPORT

Prepared for:
American Electric Power Ohio Transmission Company
8600 Smiths Mill Road
New Albany, Ohio 43054

Prepared by:

525 Vine Street, Suite 1800
Cincinnati, Ohio 45202

Project #: 60702685

December 2023

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1.0 INTRODUCTION

American Electric Power, Ohio Transmission Company (AEP Ohio Transco) is proposing improvements between the existing Vassell Station and a proposed station as part of the Vassell-Green Chapel North Project, herein "Project". The proposed route is approximately 12.6 miles long located in Delaware and Licking Counties, Ohio (OH). The Project survey area associated with this Ecological Report is located within Jersey, Johnstown, and Sunbury, OH United States Geological Survey (USGS) 7.5-minute topographical quadrangles as displayed on the Project Overview (Figure 1).

The purpose of the field survey was to assess the presence of wetlands and possible "waters of the United States" (WOTUS) that occur within the proposed Project survey area. Secondarily, land uses were also recorded to classify and characterize potential habitat for threatened and endangered species. This report will be used to assist AEP Ohio Transco's efforts to identify potential WOTUS as well as threatened and endangered species habitat present within the proposed Project survey area to avoid or minimize impacts during construction activities.

2.0 METHODOLOGY

The field survey was completed for a 300-foot-wide corridor along the proposed transmission line centerline identified as the Project survey area totaling approximately 443-acre. Due to lack of survey permissions, portions of the 300-foot-wide corridor were not surveyed as shown on Figures 2, 3, and 5. Therefore, these areas were excluded from this report and will be provided in a future addendum report. Prior to conducting field surveys, digital United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) soil survey data, United States Fish and Wildlife Service (USFWS), National Wetlands Inventory (NWI) data, USGS National Hydrography Dataset (NHD), Federal Emergency Management Agency (FEMA) 100-year floodplain data, and USGS 7.5-minute topographic maps were reviewed to identify the occurrence and location of potential wetland areas and/or streams.

Field survey activities included recording the physical boundaries of observed water features using sub-meter capable EOS Arrow Global Positioning System (GPS) units in conjunction with the ArcGIS Field Maps application on iPad tablets. The GPS data was imported into ArcMap Geographic Information System (GIS) software, where the data was reviewed, edited for accuracy, and compiled in a format suitable for transfer and use by AEP Ohio Transco. Water features were delineated and assessed based upon the appropriate procedures detailed below. Land uses observed within the Project survey area were assigned a general classification based upon the principal land characteristics and vegetative cover of the location.

2.1 WETLAND DELINEATION

The Project Survey Area was evaluated according to the procedures outlined in the United States Army Corps of Engineers (USACE) *Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory,

1987) and *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0)* (USACE, 2010).

During field survey activities, AECOM utilized the routine on-site delineation method described in the 1987 manual and supplement that consisted of a pedestrian site reconnaissance, including identifying the vegetative communities, soils identification, a geomorphologic assessment of hydrology, and notation of disturbance. If a wetland was identified, AECOM completed a USACE Wetland Determination Data Form (USACE Data Form) within each unique wetland habitat to serve as a representative of the wetland hydrology, vegetative community, and soil characteristics. Adjacent to each wetland complex, AECOM completed an additional USACE Data Form as a representative of the upland community.

2.1.1 WETLAND CLASSIFICATION

Wetlands identified in the field were classified based on the naming convention found in *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin *et al.*, 1979). The unique wetland habitats were classified as palustrine emergent (PEM), palustrine forested (PFO), palustrine unconsolidated bottom (PUB), palustrine scrub-shrub (PSS), or other classifications for some wetlands. Multiple Cowardin classifications may be present where more than one classification's vegetation is dominant (vegetation type covers 30 percent or more of the substrate). Where multiple Cowardin classifications are present, the Cowardin classification of the plants that constitute the uppermost layer of vegetation having 30% or greater coverage is used for the classification.

2.1.2 WETLAND ASSESSMENT

Each delineated wetland was assessed following the Ohio Environmental Protection Agency (OEPA) *Ohio Rapid Assessment Method for Wetlands v. 5.0* (ORAM) (Mack, 2001). Wetland assessments utilized the 10-page ORAM form, providing a final Category rating for each wetland.

2.2 STREAM ASSESSMENT

Streams were identified by the presence of a defined bed and bank, and evidence of an ordinary high-water mark (OHWM). The USACE defines the OHWM as "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas" (USACE, 2005).

2.2.1 OEPA PRIMARY HEADWATER HABITAT ASSESSMENT

Stream assessments were conducted using the methods described in the OEPA's *Methods for Assessing Habitat in Flowing Waters*: *Using OEPA's Qualitative Habitat Evaluation Index (QHEI)* (Rankin, 2006) and

in the OEPA's *Field Methods for Evaluating Primary Headwater Streams in Ohio* (OEPA, 2020). Streams associated with watershed area less than or equal to 1.0 square mile (259 hectares), and a maximum depth of water pools equal to or less than 15.75 inches were evaluated utilizing the Headwater Habitat Evaluation Index (HHEI) methodology and all other streams assessed using the QHEI methodology. Flow regime (ephemeral, intermittent, perennial) was determined by the appropriate stream assessment score per OEPA manuals (OEPA, 2020) and by AECOM's professional opinion.

Streams assessed in the Project Survey Area were reviewed for existing OEPA Aquatic Life Use Designations per OEPA's Water Quality Standards (OAC Chapter 3745-1). Those without an existing use designation were assigned a provisional aquatic life use designation based upon habitat assessment results (Rankin, 1989; OEPA, 2020).

2.2.2 OEPA 401 WATER QUALITY CERTIFICATION FOR NATIONWIDE PERMIT ELIGIBILITY

The OEPA has designated each watershed in the state on based on whether it may be ineligible for coverage under the OEPA's 401 Water Quality Certification (WQC) for Nationwide Permits (OEPA, 2017). Mapping provided by the OEPA illustrates the eligibility of streams in the area to fall under a Nationwide Permit for 401 certification or if an individual state WQC needs to be applied for. Impacts to streams within each watershed would then have eligibility for 401 WQC determined by the watershed category. The three categories are defined as:

Eligible: Streams within the watershed are eligible for coverage under the OEPA's water quality certification for the Nationwide Permits if all other general and regional special terms and conditions are met.

Ineligible: Activities affecting high quality streams and undesignated streams draining directly to high quality streams, as represented in the map, must undergo an individual 401 Water Quality Certification review process.

Possibly Eligible: Additional field screening procedures are required for streams in the watershed to determine appropriate eligibility. Activities affecting undesignated streams within those HUC12 watersheds that do not directly but eventually drain into high quality waters, might be eligible for coverage under the OEPA's 401 Water Quality Certification for Nationwide Permits depending on the results of a field screening assessment. The procedures for determining individual stream eligibility in this scenario are specified in Appendix D "Stream Eligibility Determination Process" of the OEPA Ohio State Water Quality Certification of the 2017 Nationwide Permit Reauthorization.

2.2.3 UPLAND DRAINAGE FEATURES

An upland drainage feature (UDF) is a non-jurisdictional drainage that does not meet the criteria of either a jurisdictional stream or a wetland. A UDF generally lacks an OHWM (USACE, 2005) and are equivalent to

a swale or an erosional feature as described by the USACE: “generally shallow features in the landscape that may convey water across upland areas during and following storm events. Swales usually occur on nearly flat slopes and typically have grass or other low-lying vegetation throughout the swale” (USACE, 2005).

A roadside ditch may also be documented as a UDF if it meets the “not potentially jurisdictional” characterization as described in the Office of Environmental Services *Roadway Ditch Characterization Flowchart* (Ohio Department of Transportation, 2014). This would include a ditch that originates entirely within the roadway right-of-way, has a seasonal flow regime, was not constructed to drain a wetland, and does not have hydrophytic vegetation extending more than an insignificant amount beyond its original configuration.

In addition, UDF’s (including swales, ditches, and other erosional features) are generally not WOTUS except in certain circumstances, such as relocated streams.

2.3 RARE, THREATENED, AND ENDANGERED SPECIES

AECOM conducted a threatened and endangered species review and general field habitat surveys within the Project Survey Area. AECOM submitted requests to the Ohio Department of Natural Resources (ODNR) Office of Real Estate – Environmental Review Section and the USFWS Ohio Ecological Services Field Office soliciting comments on the proposed Project. Agency-identified species of concern and available species-specific information was reviewed to identify the various habitat types that listed species are known to inhabit.

AECOM field ecologists conducted a general habitat survey in conjunction with the stream and wetland field surveys as part of assessing potential impacts to threatened and endangered species. Land uses within the Project survey area were assigned a general classification based upon the principal land characteristics and vegetative cover as observed during the field surveys.

AECOM conducted a desktop assessment of the Project survey area and a quarter-mile buffer around it to identify potentially occurring winter bat hibernaculum that may be present near the Project which is in **Figure 6**. This assessment was conducted by reviewing data on mining activity and karst geology from the ODNR Division of Mineral Resources and USGS websites.

3.0 RESULTS

AECOM ecologists walked the Project survey area to conduct the wetland delineation, stream assessment and habitat survey on June 6 and 7, 14 to 16, 21 to 23, and 26 to 27, September 11 to 15, and 26, October 17 and 18, November 8, and December 1, 5, and 6, 2023. During the delineation within the Project survey area, AECOM delineated a total of 18 wetland complexes (five PEM, eight PFO, four PEM/PFO, and one

PFO/PSS), 13 streams (six perennial, five intermittent, and two ephemeral), and two ponds. The delineated features are discussed in detail in the following section.

3.1 WETLAND DELINEATION

3.1.1 PRELIMINARY SOILS EVALUATION

According to the USDA/NRCS Web Soil Survey, Delaware and Licking Counties have a total of five soil map units identified within the Project survey area for both counties. In Delaware County, one soil map unit was listed as a hydric soil and the rest were identified as containing hydric inclusions. Similarly, Licking County identified one soil map unit as a hydric soil and the rest as containing hydric inclusions. Soils indicated as hydric inclusions are not predominately hydric soils and hydric soils are more likely to be found in topographic settings. **Table 1** below provides a detailed overview of all soil series and soil map units present within the Project survey area. Soil map units located in the Project survey area and vicinity are shown on **Figure 2**.

TABLE 1: SOIL MAP UNITS AND DESCRIPTIONS WITHIN THE PROJECT SURVEY AREA

Soil Series	Map Unit Symbol	Map Unit Description	Topographic Setting	Hydric	Hydric Component (%)
Delaware County					
Bennington	BeA	Bennington silt loam, 0 to 2 percent slopes	Ground moraines, end moraines	Yes*	Condit 10% Pewamo, low carbonate till 8%
	BeB	Bennington silt loam, 2 to 6 percent slopes	End moraines, ground moraines	Yes*	Condit 8% Pewamo, low carbonate till 8%
Centerburg	Cen1B1	Centerburg silt loam, 2 to 6 percent slopes	Ground moraines, end moraines	Yes*	Condit 10% Marengo 8%
	Cen1C2	Centerburg silt loam, 6 to 12 percent slopes, eroded	End moraines, ground moraines	Yes*	Condit 7%
Pewamo	PwA	Pewamo silty clay loam, 0 to 1 percent slopes	Drainageways on till plains, depressions on till plains	Yes	Pewamo 80%, Minster 9%
Licking County					
Bennington	BeA	Bennington silt loam, 0 to 2 percent slopes	Ground moraines, end moraines	Yes*	Condit 10% Pewamo, low carbonate till 8%
	BeB	Bennington silt loam, 2 to 6 percent slopes	End moraines, ground moraines	Yes*	Pewamo, low carbonate till 8% Condit 8%
Centerburg	Cen1B1	Centerburg silt loam, 2 to 6 percent slopes	Ground moraines, end moraines	Yes*	Condit 10% Marengo 8%
	Cen1C2	Centerburg silt loam, 6 to 12 percent slopes, eroded	End moraines, ground moraines	Yes*	Condit 7%
Pewamo	Pe	Pewamo silty clay loam, low carbonate till, 0 to 2 percent slopes	Drainageways, depressions	Yes	Pewamo-Low carbonate till 80%, Condit 12%

Yes* = Hydric inclusion present

3.1.2 NATIONAL WETLANDS INVENTORY MAP REVIEW

According to NWI data covering the Project location, the Project survey area contains 12 NWI wetlands. The locations of the NWI mapped wetlands in the Project vicinity are shown on **Figure 2**. A summary of NWI-mapped wetlands occurring in the Project survey area and the associated field identified resources is presented in **Table 2**.

TABLE 2: NWI DISPOSTION SUMMARY TABLE WITHIN THE PROJECT SURVEY AREA

NWI Code	NWI Description	Related Field Inventoried Resource (Wetland ID/Stream ID)	Comments
PEM1C	Palustrine, Emergent, Persistent, Temporarily Flooded	W-MRK-001 PEM/PFO	Feature was field verified as PEM/PFO wetland.
PEM1C	Palustrine, Emergent, Persistent, Temporarily Flooded	W-MRK-016 PEM	Feature was field verified as PEM wetland.
PEM1C	Palustrine, Emergent, Persistent, Temporarily Flooded	W-MRK-022 PEM	Feature was field verified as PEM wetland.
PFO1C	Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded	W-MRK-001 PEM/PFO	Feature was verified as PEM/PFO wetland.
PFO1C	Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded	W-MRK-005 PFO	Feature was verified as PFO wetland
PFO1C	Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded	W-MRK-013 PFO	Feature was verified as PFO wetland.
PFO1C	Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded	W-MRK-017 PFO	Feature was verified as PFO wetland.
PFO1C	Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded	W-MRK-020 PFO	Feature was verified as PFO wetland.
PFO1C	Palustrine, Forested, Broad-Leaved Deciduous, Seasonally Flooded	W-MRK-030 PEM	Feature was verified as PEM wetland.
PSS1C	Palustrine, Scrub-Shrub, Broad-Leaved Deciduous, Seasonally Flooded	W-MRK-030 PEM	Feature was verified as PEM wetland.
PUBFx	Palustrine, Unconsolidated Bottom, Semi permanently Flooded, Excavated	P-MRK-004	Feature was field verified as a pond.
PUBGx	Palustrine, Unconsolidated Bottom, Intermittently Exposed, Excavated	P-MRK-003	Feature was field verified as a pond.

3.1.3 DELINEATED WETLANDS

During the field survey, AECOM identified 18 wetland complexes (five PEM, eight PFO, four PEM/PFO, and one PFO/PSS) within the Project survey area. Nine wetlands were assigned ORAM Category 1, and nine wetlands were assigned Category 2 wetlands within the Project survey area. No Category 3 wetlands were identified within the Project survey area. A summary of the delineated features is provided in **Table 3**. The AECOM delineation boundaries are provided on **Figure 3**.

AECOM has given all wetlands within the Project survey area a provisional determination of non-isolated. Final jurisdictional status can only be determined by the USACE, and AECOM assessments are provisional. The locations and approximate extent of the wetlands identified within the Project survey area is shown on **Figure 3**. The completed data forms and photographs of each wetland are provided in **Appendix A**.

TABLE 3: SUMMARY OF DELINEATED WETLANDS WITHIN THE PROJECT SURVEY AREA

Wetland ID	Location		Isolated?	Habitat Type	Delineated Area (acre)	ORAM		Nearest Structure # (Existing / Proposed)	Existing Structure # in Wetland	Proposed Structure # in Wetland	Structure Installation Method	Proposed Impacts	
	Latitude	Longitude				Score	Category					Temporary Matting Area (acre)	Permanent Impact Area (acre)
W-CRW-001	40.224988	-82.850404	Yes	PEM	0.210	29	1	63	None	None	TBD	TBD	TBD
W-MRK-001	40.222487	-82.826070	No	PEM	0.356	39	2	58	None	None	TBD	TBD	TBD
	40.222258	-82.827372		PFO	3.988				None	58	TBD	TBD	TBD
W-MRK-002	40.222414	-82.824598	No	PEM	0.226	39	2	57	None	None	TBD	TBD	TBD
	40.222070	-82.824641		PFO	0.551				None	None	TBD	TBD	TBD
W-MRK-004	40.148161	-82.748641	Yes	PFO	0.367	35	2	17	None	None	TBD	TBD	TBD
W-MRK-005	40.147472	-82.748273	Yes	PFO	0.034	35	2	17	None	None	TBD	TBD	TBD
W-MRK-006	40.128403	-82.725013	No	PEM	0.016	23	1	5	None	None	TBD	TBD	TBD
W-MRK-007	40.128079	-82.725113	No	PEM	0.516	35.5	2	5	None	None	TBD	TBD	TBD
W-MRK-011	40.187063	-82.776704	Yes	PEM	0.422	12	1	36	None	None	TBD	TBD	TBD
W-MRK-012	40.215830	-82.813053	Yes	PFO	0.540	26	1	52	None	None	TBD	TBD	TBD
W-MRK-013	40.214477	-82.813157	Yes	PFO	3.490	26	1	52	None	52	TBD	TBD	TBD
W-MRK-014	40.213258	-82.812144	Yes	PFO	0.261	26	1	51	None	None	TBD	TBD	TBD
W-MRK-016	40.132913	-82.744998	Yes	PEM	0.285	19	1	11	None	None	TBD	TBD	TBD
	40.132786	-82.745138		PFO	0.223				None	None	TBD	TBD	TBD
W-MRK-017	40.140132	-82.749653	Yes	PFO	0.150	35	2	15	None	None	TBD	TBD	TBD
W-MRK-020	40.221870	-82.818920	Yes	PSS	1.120	31	2	55	None	None	TBD	TBD	TBD
	40.224070	-82.846010		PFO	0.737				None	None	TBD	TBD	TBD
W-MRK-022	40.128340	-82.731160	No	PEM	0.679	15	1	62	None	None	TBD	TBD	TBD
W-MRK-030	40.192450	-82.781720	Yes	PEM	0.434	45	2	22	None	None	TBD	TBD	TBD
	40.161560	-82.748835		PFO	4.45				None	22	TBD	TBD	TBD
W-MRK-034	40.187063	-82.776704	No	PEM	0.06	14	1	7	None	None	TBD	TBD	TBD
W-MRK-035	40.215830	-82.813053	No	PFO	0.266	30	2	40	None	40	TBD	TBD	TBD
P-MRK-003	40.124774	-82.719418	No	N/A	0.129	N/A	N/A	2	None	None	TBD	TBD	TBD
P-MRK-004	40.127664	-82.723867	No	N/A	0.339	N/A	N/A	5	None	None	TBD	TBD	TBD
				Total:	**19.381**							**TBD**	**TBD**

3.2 STREAM DELINATION

During the field survey, AECOM delineated 13 streams (six perennial, five intermittent, and two ephemeral). Of these delineated streams, 7 streams were classified using HHEI evaluations that identified two streams as Class I PHW, three as Class II PHW, and two as Class III PHW as well as one stream was classified using QHEI evaluations with a Poor habitat rating. The remaining five streams had an existing OEPA Aquatic Life Use Designation of Warmwater Habitat (WWH) under Ohio Revised Code (ORC) Chapter 3745-1, which take precedent over any HHEI or QHEI evaluations.

AECOM has provided a provisional determination that all delineated streams within the Project survey area appear to be jurisdictional (i.e., WOTUS), based on their observed or presumed confluence with downstream waters. Final jurisdictional status can only be determined by the USACE, and AECOM assessments are provisional. A summary of the delineated features is provided in **Table 4**. Stream data forms and photographs of each delineated stream resource are provided in **Appendix B**.

TABLE 4: SUMMARY OF DELINEATED STREAMS WTIHIN THE PROJECT SURVEY AREA

Stream ID	Location		Stream Type	Stream Name	Delineated Length (feet)	Bankfull Width (feet)	OHWM Width (feet)	Field Evaluation			Ohio EPA 401 Eligibility	Stream Crossing ?	Proposed Impacts	
	Latitude	Longitude						Method	Score	Category / Rating / OAC Designation			Fill Type	Area (acre)
S-CRW-001	40.22706	-82.85052	Intermittent	UNT to Big Walnut Creek	409	2.5	11	HHEI	75	Class III PHW	Eligible	TBD	TBD	TBD
S-MRK-001	40.22222	-82.82706	Ephemeral	UNT to Big Walnut Creek	218	2.5	1.75	HHEI	13	Class I PHW	Eligible	TBD	TBD	TBD
S-MRK-002	40.20528	-82.78772	Intermittent	UNT to Hoover Reservoir	1,865	6	2.5	HHEI	40	Class II PHW	Eligible	TBD	TBD	TBD
S-MRK-005	40.15291	-82.74847	Perennial	UNT to Duncan Run	990	16	9	QHEI	40	Poor	Eligible	TBD	TBD	TBD
S-MRK-006	40.12718	-82.71824	Intermittent	Kiber Run	469	8	3	CH 3745-1	N/A	Warmwater Habitat	Eligible	TBD	TBD	TBD
S-MRK-007	40.12840	-82.72470	Perennial	Kiber Run	1,327	10	6.5	CH 3745-1	N/A	Warmwater Habitat	Eligible	TBD	TBD	TBD
S-MRK-008	40.12808	-82.72432	Intermittent	UNT to Kiber Run	170	10	6.5	HHEI	37	Class II PHW	Eligible	TBD	TBD	TBD
S-MRK-009-x1	40.13005	-82.737656	Perennial	Duncan Run	1,200	6	11	CH 3745-1	N/A	Warmwater Habitat	Eligible	TBD	TBD	TBD
S-MRK-009-x2	40.128761	-82.731214	Perennial	Duncan Run	1,437	6	11	CH 3745-1	N/A	Warmwater Habitat	Eligible	TBD	TBD	TBD
S-MRK-015	40.20369	-82.77273	Perennial	Duncan Run	409	3.5	2	CH 3745-1	N/A	Warmwater Habitat	Eligible	TBD	TBD	TBD
S-MRK-016	40.13277	-82.74191	Ephemeral	UNT to Duncan Run	74	2	1	HHEI	10	Modified Class I	Eligible	TBD	TBD	TBD
S-MRK-017	40.13478	-82.74848	Intermittent	UNT to Duncan Run	1,395	2	1	HHEI	50	Modified Class II	Eligible	TBD	TBD	TBD
S-MRK-018	40.13621	-82.74888	Perennial	Duncan Run	841	15	6	CH 3745-1	N/A	Warmwater Habitat	Eligible	TBD	TBD	TBD
S-MRK-023	40.22408	-82.84764	Perennial	UNT to Big Walnut Creek	443	6	6	HHEI	55	Class III PHW	Eligible	TBD	TBD	TBD
				Total:	**11,247**									**TBD**

3.2.1 OEPA STREAM ELIGIBILITY

OEPA stream eligibility for 401 WQC mapping was reviewed for the Project survey area. The Project occurs across five watersheds, all of which were designated by 401 WQC eligibility as “eligible” as listed in **Table 5**. The OEPA stream eligibility mapping for the Project survey area is provided on **Figure 4**.

TABLE 5- SUMMARY OF WATERSHED 401 WQC ELIGIBILITY WITHIN THE PROJECT SURVEY AREA

HUC-12	Watershed	401 WQC Eligibility	Number of Stream Assessments
050600011503	Prairie Run-Big Walnut Creek	Eligible	3
050600011308	Hoover Reservoir-Big Walnut Creek	Eligible	1
050600011303	Rattlesnake Creek	Eligible	0
050600011307	Duncan Run	Eligible	6
050400060301	Headwaters Raccoon Creek	Eligible	3
		Total	**13**

3.3 FEMA 100 YEAR FLOODPLAINS

Mapped FEMA designated 100-year floodplains and floodways are displayed on **Figure 2.** Regulated FEMA 100-year floodplains are located within the Project survey area, but no FEMA regulated floodways are located within the Project survey area (FEMA, 2023). The mapped 100-year floodplains within the Project survey areas are located between Structure 2 to 3, 4 to 11, and 13 to 14 as displayed on **Figure 2**.

3.4 PONDS

During the field survey, AECOM identified two ponds within the Project survey area. The extent of the ponds are displayed on **Figures 2 and 3**. Photographs of all delineated ponds are provided in **Appendix C**.

3.5 UPLAND DRAINAGE FEATURES

During the field survey, AECOM identified 15 upland drainage features within the Project survey area. The extent of the upland drainage features are displayed on **Figures 2 and 3**. Photographs of all delineated upland drainage features are provided in **Appendix D**.

3.6 VEGETATIVE COMMUNITIES

AECOM ecologists conducted a general habitat survey in conjunction with the stream and wetland field surveys. As described in **Table 6** below, the Project survey area contained Agriculture Row-Crop, Woodlands, Pasture/Hay Fields, Streams/Wetlands, Urban, Old Field, Landscaped Areas, and Scrub-Shrub Habitat. Vegetative communities are depicted visually on aerial photography in **Figure 5**. Representative photographs of the vegetative communities in the Project survey area are provided as **Appendix E**.

TABLE 6 - VEGETATIVE COMMUNITIES WITHIN THE PROJECT SURVEY AREA

Vegetative Community	Description	Approximate Acreage Within the Project Survey Area	Approximate Percentage Within the Project Survey Area
Agriculture Row-Crop	Agricultural lands being utilized for row-crop production and associated activities, typically devoid of vegetation outside of the target crop and opportunistic/invasive species.	342	77.20
Landscaped Areas	Landscaped areas, including residential properties and commercial properties, were observed within the Project vicinity. These landscaped areas within the Project survey area and adjacent areas are frequently mowed grasses and forbs.	9	2.03
Old Field	Herbaceous cover exists alongside roads, field borders, and abandoned fields within the survey area of the Project in the form of successional old-field communities. These communities are the earliest stages of recolonization by plants following disturbance. This community type is typically short-lived, giving way progressively to shrub and forest communities unless periodically re-disturbed, in which case they remain as old fields. The old-field areas within the study corridors and adjacent areas are infrequently mowed areas of grasses, forbs, and occasional shrubs.	13	2.93
Pasture/Hay Fields	Cattle and/or horse pasture, and hay fields, dominated by seasonally mowed and grazed areas of grasses and forbs.	16	3.61
Scrub-Shrub	Scrub-shrub habitats represent the successional stage between old-field and second growth forest, and often emerge in recently harvested forests responding to the lightness of the remaining canopy. Dominant species consist of herbaceous communities similar to that of old field habitat with 30% or greater coverage of woody species that are not trees (including sapling trees generally <3" dbh and <20' in height).	1	0.23
Streams/Wetlands	Streams and wetlands were observed both within and beyond the survey area for the Project.	20	4.51
Urban	Urban areas are areas developed with residential and commercial land uses, including roads, buildings and parking lots. These areas are generally devoid of significant woody and herbaceous vegetation.	8	1.81
Woodlands (Mixed-Deciduous)	Woodlands (floodplain, upland, successional-mixed, etc) are present along the Project survey area. Woody species dominating these areas included Box elder (Fraxinus pennsylvanica), and Red maple (*Acer rubrum*)	34	7.67
	Totals:	**443**	**100%**

3.7 RARE, THREATENED AND ENDANGERED SPECIES AGENCY COORDINATION

Protected Species Agency Consultation –

Initial coordination letters to the United States Fish and Wildlife Service (USFWS) and the Ohio Department of Natural Resources (ODNR) were sent on September 8, 2023, and responses were received by the USFWS on September 11, 2023 and ODNR on October 13, 2023. Copies of the received USFWS and ODNR agency correspondence has been provided as **Appendix F**.

Regarding state and federal listed threatened and endangered species that may occur within the Project vicinity, a total of three species were identified by the USFWS and ten species were identified by the ODNR. Based on the review of these species and the habitat identified within the Project survey area, it is not anticipated that the Project would adversely affect any of the species or their habitats identified within **Table 7**.

Table 7 provides a list of species of concern identified by the agencies as potentially occurring within the vicinity of the Project. Photographs of the habitat within the Project survey area are provided as **Appendix E**.

TABLE 7
ODNR AND USFWS LISTED SPECIES WITHIN THE PROJECT SURVEY AREA

Common Name (Scientific Name)	State Status	Federal Status	Typical Habitat	Habitat Observed	Avoidance Dates	Agency Comments	Potential Impacts
Mammals							
Indiana Bat (*Myotis sodalis*)	Endangered	Endangered	Summer habitat During spring/summer, this bat species roosts in trees behind loose, exfoliating bark, in crevices and cavities, or in leaves. Hibernaculum(a) During winter, this species hibernates in humid mines, caves, and occasionally man-made structures.	Summer habitat Within the Project survey forested woodlots will be impacted by the Project that contain suitable roosting trees. Hibernaculum(a) No mine openings and/or known caves are located within 0.25 miles of Project area and USFWS did not identify known hibernacula within 5-miles of the Project. However, one surface mine operation was identified within the Project area, which does not provide suitable hibernacula for the species. Field evaluations did not identify any potential hibernaculum(a) within the Project area (2023 Joint Guidance) *.	April 1 – September 30	Summer habitat ODNR and USFWS recommends adherence to Avoidance Dates for Tree Clearing Activities (April 1 – September 30). Hibernaculum(a) The ODNR DOW recommends a desktop habitat assessment to be conducted to identify potential hibernacula within 0.25 miles of the Project area. If habitat assessment finds potential hibernaculum within 0.25 miles, a revised seasonal tree clearing restriction (March 15 to November 15) is recommended (2023 Joint Guidance) *. If absence or no tree cutting or subsurface impacts are proposed, the Project is not likely to impact this species.	Summer habitat Potential summer roosting habitat is present within the Project area and seasonal tree clearing, between October 1 and March 31, is recommended. Hibernaculum(a) No impacts to winter hibernacula were identified due to absence of caves, mines, or portals within 0.25-miles of the Project.
Northern Long-eared Bat (*Myotis septentrionalis*)	Endangered	Endangered	Summer habitat During spring/summer, this bat species roosts in trees behind loose, exfoliating bark, in crevices and cavities, or in leaves. Hibernaculum(a) During winter, this species hibernates in humid mines, caves, and occasionally man-made structures.	Summer habitat Within the Project survey forested woodlots will be impacted by the Project that contain suitable roosting trees. Hibernaculum(a) No mine openings and/or known caves are located within 0.25 miles of Project area and USFWS did not identify known hibernacula within 5-miles of the Project. However, one surface mine operation was identified within the Project area, which does not provide suitable hibernacula for the species. Field evaluations did not identify any potential hibernaculum(a) within the Project area (2023 Joint Guidance) *.	April 1 – September 30	Summer habitat ODNR and USFWS recommends adherence to Avoidance Dates for Tree Clearing Activities (April 1 – September 30). Additionally, the ODNR indicated that there is a known presence of this species within the Project area and summer surveys would not constitute a presence or absence of this species. Hibernaculum(a) The ODNR DOW recommends a desktop habitat assessment to be conducted to identify potential hibernacula within 0.25 miles of the Project area. If habitat assessment finds potential hibernaculum within 0.25 miles, a revised seasonal tree clearing restriction (March 15 to November 15) is recommended (2023 Joint Guidance) *. If absence or no tree cutting or subsurface impacts are proposed, the Project is not likely to impact this species.	Summer habitat Potential summer roosting habitat is present within the Project area and seasonal tree clearing, between October 1 and March 31, is recommended. Additional summer surveys would not constitute presence/absence within the Project area for the Northern long eared bat. Hibernaculum(a) No impacts to winter hibernacula were identified due to absence of caves, mines, or portals within 0.25-miles of the Project.
Little brown bat (*Myotis lucifugus*)	Endangered	NA	Summer habitat During spring/summer, this bat species roosts in trees behind loose, exfoliating bark, in crevices and cavities, or in leaves. Hibernaculum(a) During winter, this species hibernates in humid mines, caves, and occasionally man-made structures.	Summer habitat Within the Project survey forested woodlots will be impacted by the Project that contain suitable roosting trees. Hibernaculum(a) No mine openings and/or known caves are located within 0.25 miles of Project area and USFWS did not identify known hibernacula within 5-miles of the Project. However, one surface mine operation was identified within the Project area, which does not provide suitable hibernacula for the species. Field evaluations did not identify any potential hibernaculum(a) within the Project area (2023 Joint Guidance) *.	April 1 – September 30	Summer habitat ODNR and USFWS recommends adherence to Avoidance Dates for Tree Clearing Activities (April 1 – September 30). Hibernaculum(a) The ODNR DOW recommends a desktop habitat assessment to be conducted to identify potential hibernacula within 0.25 miles of the Project area. If habitat assessment finds potential hibernaculum within 0.25 miles, a revised seasonal tree clearing restriction (March 15 to November 15) is recommended (2023 Joint Guidance) *. If absence or no tree cutting or subsurface impacts are proposed, the Project is not likely to impact this species.	Summer habitat Potential summer roosting habitat is present within the Project area and seasonal tree clearing, between October 1 and March 31, is recommended. Hibernaculum(a) No impacts to winter hibernacula were identified due to absence of caves, mines, or portals within 0.25-miles of the Project.

TABLE 7
ODNR AND USFWS LISTED SPECIES WITHIN THE PROJECT SURVEY AREA

Common Name (Scientific Name)	State Status	Federal Status	Typical Habitat	Habitat Observed	Avoidance Dates	Agency Comments	Potential Impacts
Tricolored bat (*Perimyotis subflavus*)	Endangered	Proposed	Summer habitat During spring/summer, this bat species roosts in trees behind loose, exfoliating bark, in crevices and cavities, or in leaves. Hibernaculum(a) During winter, this species hibernates in humid mines, caves, and occasionally man-made structures.	Summer habitat Within the Project survey forested woodlots will be impacted by the Project that contain suitable roosting trees. Hibernaculum(a) No mine openings and/or known caves are located within 0.25 miles of Project area and USFWS did not identify known hibernacula within 5-miles of the Project. However, one surface mine operation was identified within the Project area, which does not provide suitable hibernacula for the species. Field evaluations did not identify any potential hibernaculum(a) within the Project area (2023 Joint Guidance) *.	April 1 – September 30	Summer habitat ODNR and USFWS recommends adherence to Avoidance Dates for Tree Clearing Activities (April 1 – September 30). Hibernaculum(a) The ODNR DOW recommends a desktop habitat assessment to be conducted to identify potential hibernacula within 0.25 miles of the Project area. If habitat assessment finds potential hibernaculum within 0.25 miles, a revised seasonal tree clearing restriction (March 15 to November 15) is recommended (2023 Joint Guidance) *. If absence or no tree cutting or subsurface impacts are proposed, the Project is not likely to impact this species.	Summer habitat Potential summer roosting habitat is present within the Project area and seasonal tree clearing, between October 1 and March 31, is recommended. Hibernaculum(a) No impacts to winter hibernacula were identified due to absence of caves, mines, or portals within 0.25-miles of the Project.
Mussels							
Pondhorn (*Uniomerus tetralasmus*)	Threatened	None	Perennial Streams	Perennial streams present.	March 15 through June 30	The DOW recommends no in-water work in perennial streams from March 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed in a perennial stream, this Project is not likely to impact aquatic species.	No in-stream work is anticipated to be required for the Project.
Rabbitsfoot (*Quadrula cylindrica cylindrica*)	Threatened	Threatened	Perennial Streams	Perennial streams present.	March 15 through June 30	The DOW recommends no in-water work in perennial streams from March 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed in a perennial stream, this Project is not likely to impact aquatic species.	No in-stream work is anticipated to be required for the Project.
Rayed bean (*Villosa fabalis*)	Endangered	Endangered	Perennial Streams	Perennial streams present.	March 15 through June 30	The DOW recommends no in-water work in perennial streams from March 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed in a perennial stream, this Project is not likely to impact aquatic species.	No in-stream work is anticipated to be required for the Project.
Salamander mussel (*Simpsonaias ambigua*)	Threatened	None	Perennial Streams	Perennial streams present.	March 15 through June 30	The DOW recommends no in-water work in perennial streams from March 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed in a perennial stream, this Project is not likely to impact aquatic species.	No in-stream work is anticipated to be required for the Project.
Snuffbox (*Epioblasma triquetra*)	Endangered	Endangered	Perennial Streams	Perennial streams present.	March 15 through June 30	The DOW recommends no in-water work in perennial streams from March 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed in a perennial stream, this Project is not likely to impact aquatic species.	No in-stream work is anticipated to be required for the Project.
Birds							
Northern harrier (*Circus hudsonius*)	Endangered	None	This species hunts over grasslands and nests can be found in large marshes and grasslands.	Several old field and/or pasture/hay fields > 2 acres in size were identified within the survey area.	April 15 to July 31	Habitat should be avoided during the bird's nesting period between April 15 through July 31. If habitat will not be impacted, this Project will not likely impact species.	No

Protected Species Agency Summary

Based on general observations during the ecological field survey, forested areas were identified within the Project survey area and tree clearing is proposed as part of the Project. The ODNR and the USFWS recommend implementations of seasonal tree clearing between October 1 and March 31 to avoid adverse effects to Indiana bat, northern long-eared bat, little brown bat, and tricolored bat. ODNR confirmed a known presence in the vicinity of the Project area for the northern long-eared bat. If trees must be cut during the summer months, the ODNR recommends that a mist net survey could be completed for the Indiana bat, little brown bat, and the tricolored bat between June 1 and August 15. However, additional summer surveys would not constitute presence/absence within the Project survey area for the northern long-eared bat. If summer tree clearing is needed, additional coordination would be completed with ODNR and the USFWS.

AECOM completed a desktop review for potential hibernaculum in accordance with the 2023 Ohio ODNR DOW and USFWS Joint Guidance for Bat Surveys and Tree Clearing within 0.25-mile of the Project survey area (**Figure 6**). No caves, and/or karst features were identified within a 0.25-miles radius of the Project Area that are anticipated to provide suitable hibernacula for cave-dwelling bats. However, a surface industrials mineral mine operation was within 0.25-mile of the Project survey area (**Figure 6**), based on the available desktop resources, this does not indicate an area which is anticipated to provide suitable hibernacula for cave-dwelling bats. As per ODNR and USFWS guidance, further coordination regarding potential hibernaculum is only necessary if the habitat assessment find potential habitat within 0.25-mile of the Project survey area. Therefore, no further coordination was necessary with either the ODNR and/or USFWS regarding the listed bat species for hibernacula; however, coordination with the ODNR and the USFWS will be necessary for tree clearing outside of the seasonal restriction.

No impacts are anticipated for the mussel species as no in-water work is proposed as part of the Project.

The ODNR has provided guidance that open grasslands and wet meadow marshes of approximately 2 acres should be considered potential nesting habitat for the northern harrier. While the general Project survey area is heavily dominated by agricultural land with interspersed woodlands and residential properties, two old field habitats were identified that warranted further investigations. Based on field and desktop review, the two areas (Vassell Station to Structure 62 and Structure 50 to 51) were identified as large fields that meet the ODNR requirement for size but had limiting factors that would exclude these areas from consideration of potential habitat. For Vassell Station to Structure 62, the area was intermixed with saplings or other woody shrub vegetation that wouldn't permit open flyways or nesting opportunities for the species due to fragmentation of the habitat that promotes predations or the "edge effect". Similar, the open field north of Structure 50 to 51 is enclosed by forested areas and appears to be maintained field from mowing and/or livestock grazing that would not provide suitable vegetation height to support nesting

opportunities for the species. Therefore, no further coordination regarding this listed species is necessary concerning this Project.

4.0 SUMMARY

The ecological field survey of the Project survey area identified a total of 18 wetland complexes (five PEM, eight PFO, four PEM/PFO, and one PFO/PSS). Of the 18 wetlands identified within the Project survey area, nine Category 1 wetlands and nine Category 2 wetlands were identified, boundaries of which are provided on **Figure 3**. Of the 13 streams identified within the Project survey area, 7 streams were classified using HHEI evaluations that identified two streams as Class I PHW, three as Class II PHW, and two as Class III PHW as well as one stream was classified using QHEI evaluations with a Poor habitat rating. The remaining five streams had an existing OEPA Aquatic Life Use Designation of Warmwater Habitat (WWH) under Ohio Revised Code (ORC) Chapter 3745-1, which take precedent over any HHEI or QHEI evaluations.

AECOM has preliminary determined that the assessed streams within the Project survey area appear to be jurisdictional (i.e., WOTUS). The reported results of the ecological survey conducted by AECOM on this Project are limited to the areas within the Project survey area provided on **Figure 3**. Areas that fall outside of the Project survey area were not evaluated in the field and are not included in the reporting of this survey.

Of the ten state and/or federal listed threatened or endangered species within range of the Project survey area, no habitat for any of the listed aquatic or bird species were identified within the Project survey area. However, four bat species were identified as having potential summer roosting habitat and no hibernacula within the Project survey area. If tree clearing cannot be completed during the seasonal tree clearing restriction (October 1 to March 31), further coordination with the ODNR/USFWS is warranted. Additionally, the northern long-eared bat was identified as a known occurrence and additional summary surveys would not constitute a presence/absence for this species.

The field survey results presented herein apply to the existing and reasonably foreseeable site conditions at the time of our assessment. They cannot apply to site changes of which AECOM is unaware and has not had the opportunity to review. Changes in the condition of a property may occur with time due to natural processes or human impacts at the Project site or on adjacent properties. Changes in applicable standards may also occur as a result of legislation or the expansion of knowledge over time. Accordingly, the findings of this report may be invalidated, wholly or in part, by changes beyond the control of AECOM.

5.0 REFERENCES

Cowardin, L.M., V. Carter, F.C. Golet and E.T. LaRoe. 1979. *Classification of Wetlands and Deepwater Habitats of the United States.* Office of Biological Services, U.S. Fish and Wildlife Service, Washington, D.C.

Environmental Laboratory. 1987. *United States. Corps of Engineers Wetlands Delineation Manual.* Technical Report Y-87-1, U.S. Army Engineer Waterways Experiment Station: Vicksburg, Mississippi.

Federal Emergency Management Agency. 2008. National Flood Hazard Layer, Delaware & Licking County, Ohio. https://msc.fema.gov/portal Published July 17, 2008.

Mack, John J. 2001. *Ohio Rapid Assessment Method for Wetlands v. 5.0, User's Manual and Scoring Forms. OEPA Technical Report WET/2001-1*. Ohio Environmental Protection Agency, Division of Surface Water, 401/Wetland Ecology Unit, Columbus, Ohio.

Ohio Department of Transportation. 2014. Roadway Ditch Characterization Flowchart. From: Ecological Manual, April 2014. Office of Environmental Services.

Ohio Division of Wildlife and United States Fish and Wildlife Service (USFWS) (OH-Field Office). 2023. Joint Guidance for Bat Surveys and Tree Clearing. Published May 2023.

Ohio Environmental Protection Agency (OEPA). 2017. Section 401 Water Quality Certification for the 2017 Nationwide Permits. Appendix D Stream Eligibility Determination Process. Effective March 17, 2017. Ohio Environmental Protection Agency, Division of Surface Water, 401 Water Quality Certification and Isolated Wetland Permitting Section, Columbus, Ohio.

OEPA. 2017. 401 Water Quality Certification for the Nationwide Permits Stream Eligibility Web Map (2017 Reissuance). https://data-oepa.opendata.arcgis.com/datasets/401-water-quality-certification-for-nationwide-permits

OEPA. 2020. *Field Methods for Evaluating Primary Headwater Streams in Ohio*. Version 4.1. Ohio EPA Division of Surface Water, Columbus, Ohio. May 2020. 130 pp.

Rankin, Edward T. 1989. T*he Qualitative Habitat Evaluation Index (QHEI*): *Rationale, Methods, and Application*. Ohio EPA Ecological Assessment Section, Division of Surface Water, Columbus, Ohio.

Rankin, Edward T. 2006. *Methods for Assessing Habitat in Flowing Waters: Using the Qualitative Habitat Evaluation Index (QHEI)*. OEPA Ecological Assessment Section, Division of Surface Water, Columbus, Ohio.

United States Army Corps of Engineers (USACE). 2005. Regulatory Guidance Letter No. 05-05: Guidance on Ordinary High Water Mark Identification.

USACE. 2010. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest (Version 2.0)*, ed. J. S. Wakeley, R. W. Lichvar, J. F. Berkowitz, and C. V. Noble. ERDC/EL TR-10-16. Vicksburg, MS: U.S. Army Engineer Research and Development Center.

USACE. 2020. *National Wetland Plant List*, version 3.5. Engineer Research and Development Center. Cold Regions Research and Engineering Laboratory, Hanover, NH. http://wetland_plants.usace.army.mil/

United States Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS). 2023a. National Hydric Soils List. http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/use/hydric/. Accessed December 2023.

USDA, NRCS. 2023b. Web Soil Survey (GIS Shapefile). http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm. Accessed December 2023.

USFWS. 2023. National Wetlands Inventory Geodatabase for Ohio. Available online at http://www.fws.gov/wetlands/Data/Mapper.html. Accessed August 2023.

United States Geological Survey. 2016. National Hydrography Dataset, Ohio Statewide Geodatabase. Published August 2016. Earth Science Information Center, USGS, Reston, VA.

BERKSHIRE TOWNSHIP

TRENTON TOWNSHIP

HARTFORD TOWNSHIP

Galena

Sunbury

Johnstown

DELAWARE COUNTY

LICKING COUNTY

GENOA TOWNSHIP

HARLEM TOWNSHIP

MONROE TOWNSHIP

DELAWARE COUNTY

FRANKLIN COUNTY

BLENDON TOWNSHIP

New Albany

PLAIN TOWNSHIP

JERSEY TOWNSHIP

Jersey

Northeast Columbus

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Vassell Station

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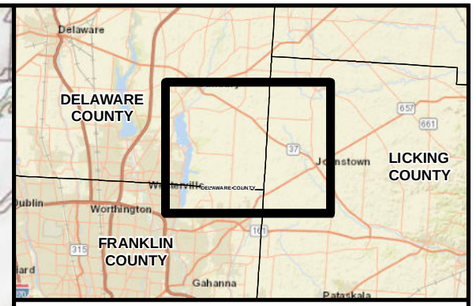
-82.719497
Proposed Station



Legend

- Station
- Vassell - Green Chapel North Route
- Ohio USGS 7.5' Topographic Quadrangle
- Township Boundary
- County Boundary

3

0 0.5 1 2

Miles

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 1
PROJECT OVERVIEW

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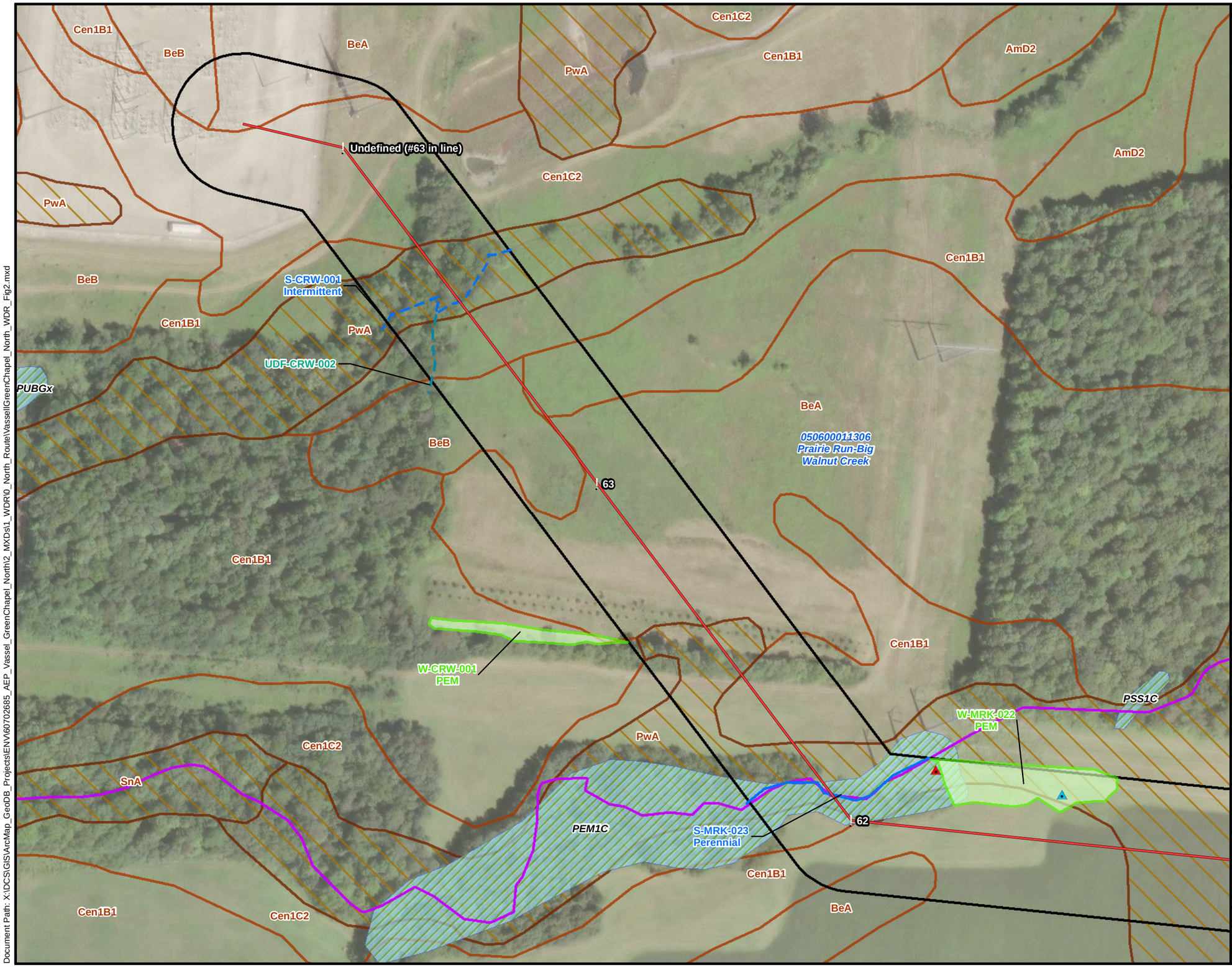

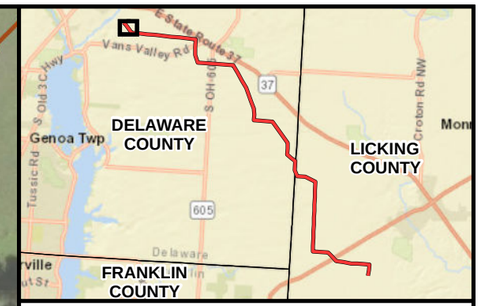

Legend

- Structure
- Wetland Data Point
- Upland Data Point
- Vassell - Green Chapel North Route
- Delineated Upland Drainage Feature
- Delineated Intermittent Stream
- Delineated Perennial Stream
- NHD Stream (USGS)
- Delineated PEM Wetland
- Project Survey Area
- NWI Wetland (USFWS)
- HUC 12 (USGS)
- SSURGO Soil Map Unit (NRCS)
- Hydric SSURGO Soil Map Unit (NRCS)

Soil Map Unit Description

BeA - Bennington silt loam, 0 to 2 percent slopes

BeB - Bennington silt loam, 2 to 6 percent slopes

Cen1B1 - Centerburg silt loam, 2 to 6 percent slopes

Cen1C2 - Centerburg silt loam, 6 to 12 percent slopes, eroded

PwA - Pewamo silty clay loam, 0 to 1 percent slopes

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 2
SHEET 1 OF 29
SOIL MAP AND
NATIONAL WETLANDS INVENTORY MAP

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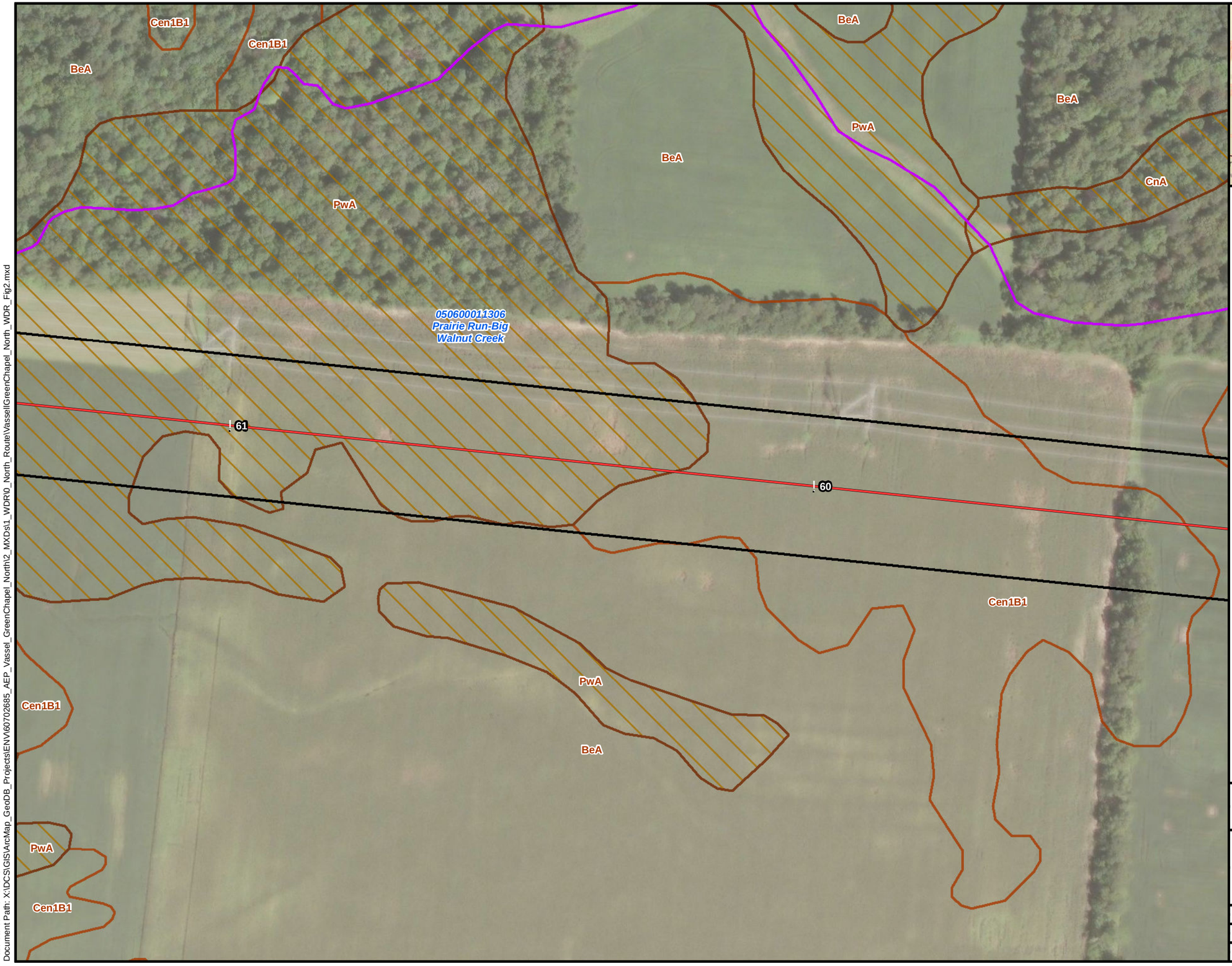

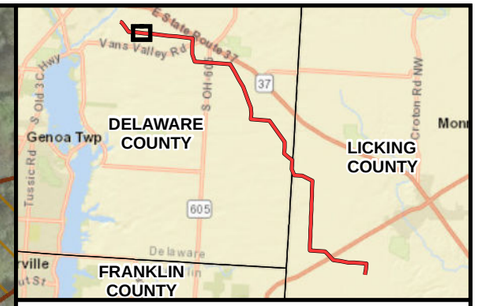

Legend

- Structure
- Vassell - Green Chapel North Route
- NHD Stream (USGS)
- Project Survey Area
- HUC 12 (USGS)
- SSURGO Soil Map Unit (NRCS)
- Hydric SSURGO Soil Map Unit (NRCS)

Soil Map Unit Description

BeA - Bennington silt loam, 0 to 2 percent slopes

Cen1B1 - Centerburg silt loam, 2 to 6 percent slopes

PwA - Pewamo silty clay loam, 0 to 1 percent slopes

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 2
SHEET 2 OF 29
SOIL MAP AND
NATIONAL WETLANDS INVENTORY MAP

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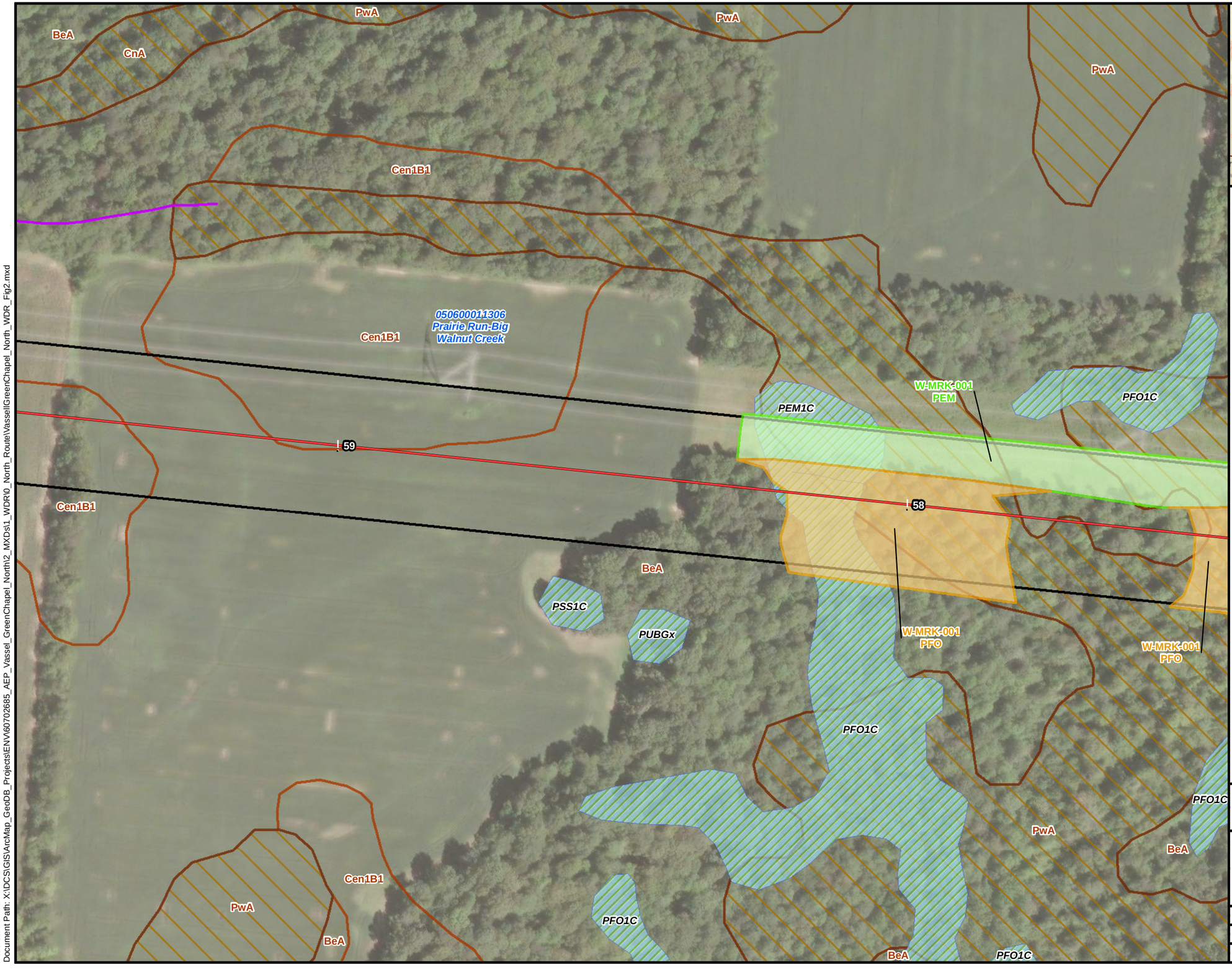

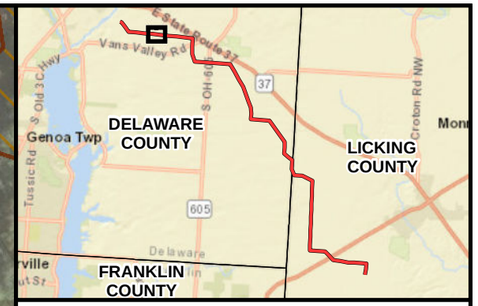

Legend

- Structure
- Vassell - Green Chapel North Route
- NHD Stream (USGS)
- Delineated PEM Wetland
- Delineated PFO Wetland
- Project Survey Area
- NWI Wetland (USFWS)
- HUC 12 (USGS)
- SSURGO Soil Map Unit (NRCS)
- Hydric SSURGO Soil Map Unit (NRCS)

Soil Map Unit Description

BeA - Bennington silt loam, 0 to 2 percent slopes

Cen1B1 - Centerburg silt loam, 2 to 6 percent slopes

PwA - Pewamo silty clay loam, 0 to 1 percent slopes

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 2
SHEET 3 OF 29
SOIL MAP AND
NATIONAL WETLANDS INVENTORY MAP

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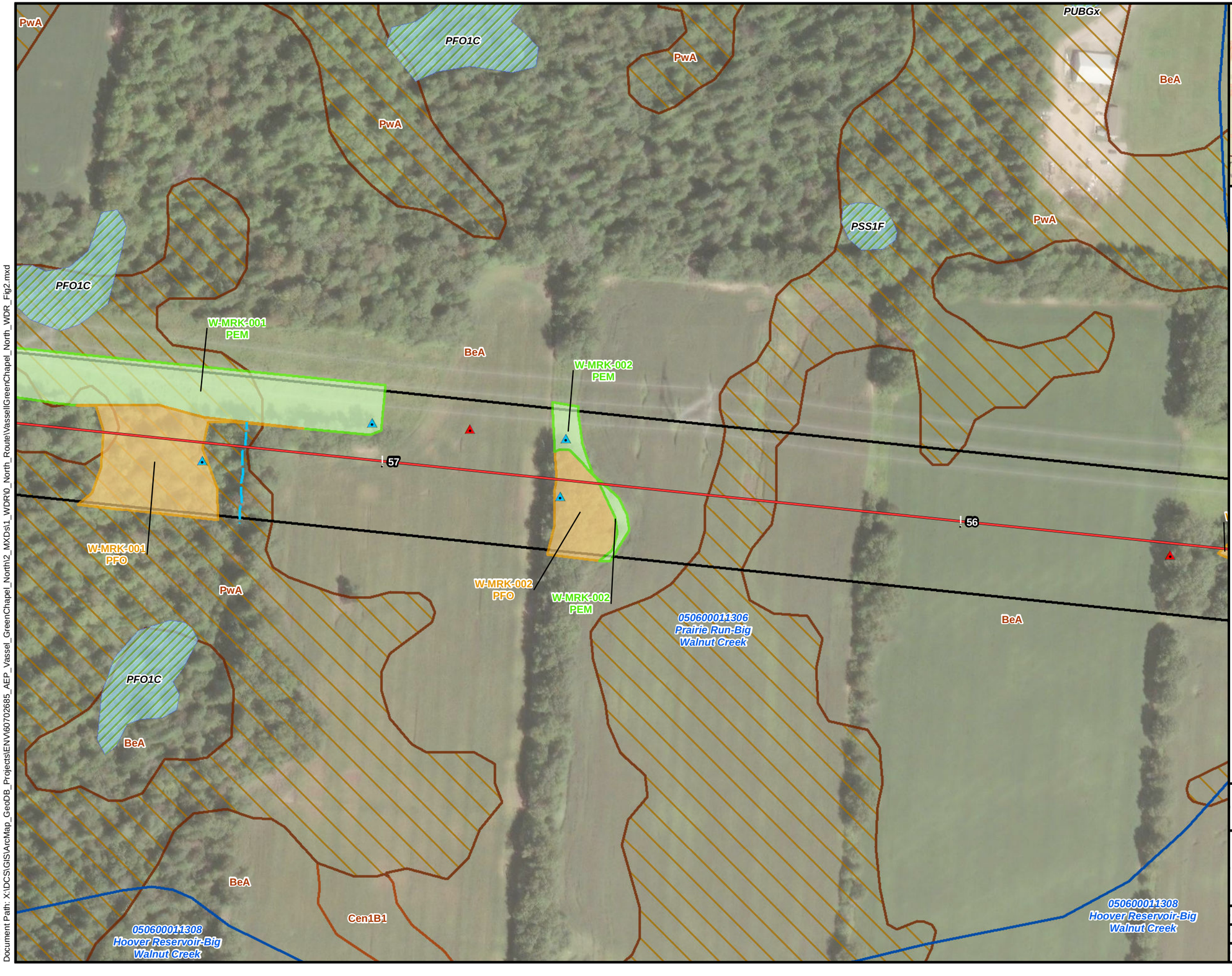

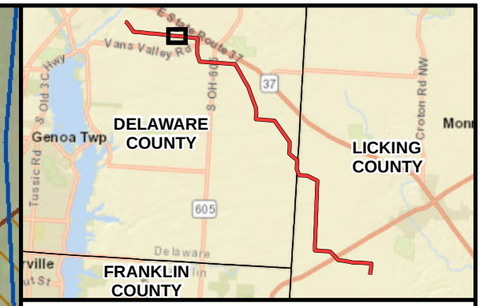

Legend

- Structure
- Wetland Data Point
- Upland Data Point
- Vassell - Green Chapel North Route
- Delineated Ephemeral Stream
- Delineated PEM Wetland
- Delineated PFO Wetland
- Project Survey Area
- NWI Wetland (USFWS)
- HUC 12 (USGS)
- SSURGO Soil Map Unit (NRCS)
- Hydric SSURGO Soil Map Unit (NRCS)

Soil Map Unit Description

BeA - Bennington silt loam, 0 to 2 percent slopes

PwA - Pewamo silty clay loam, 0 to 1 percent slopes

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 2
SHEET 4 OF 29
SOIL MAP AND
NATIONAL WETLANDS INVENTORY MAP

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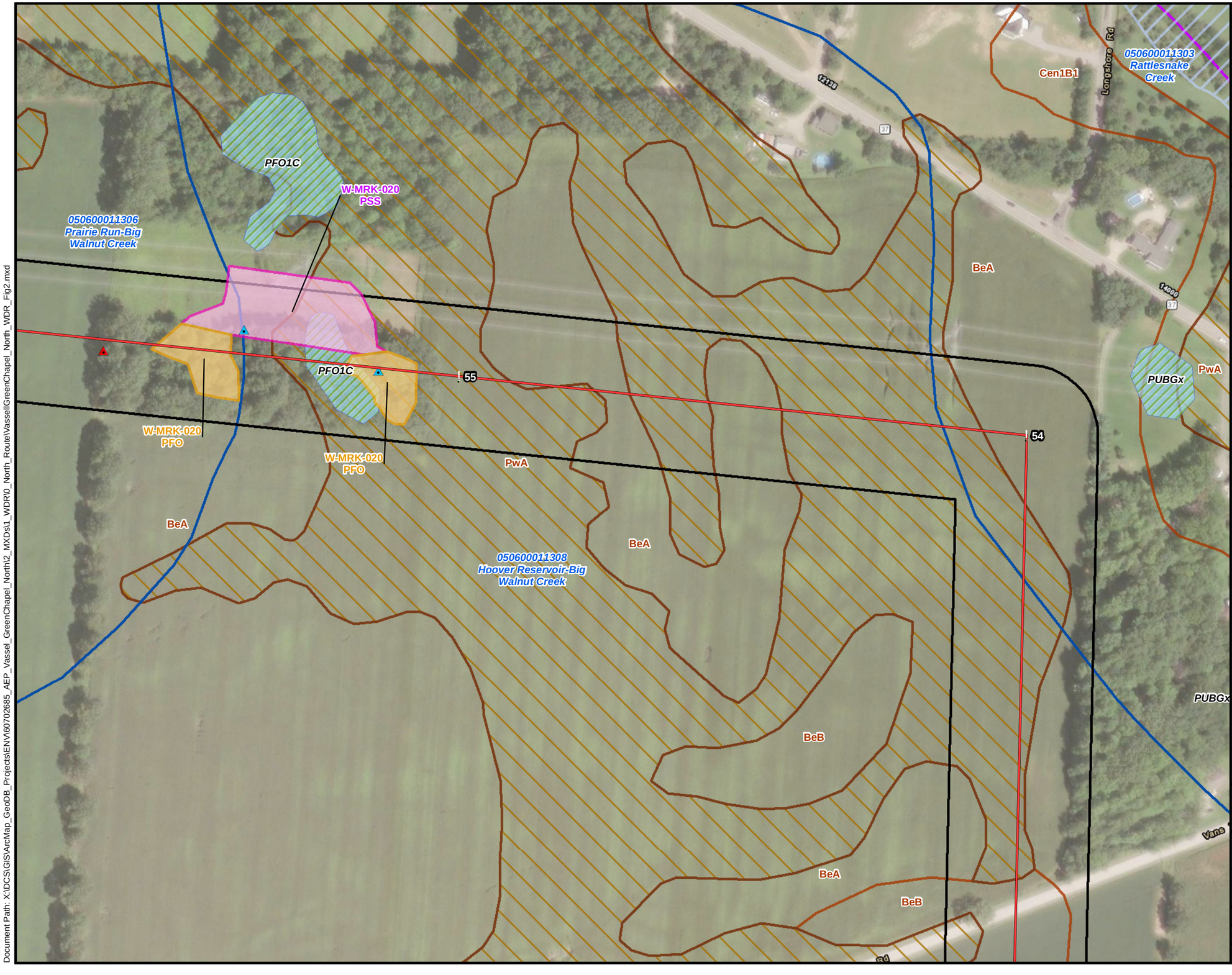

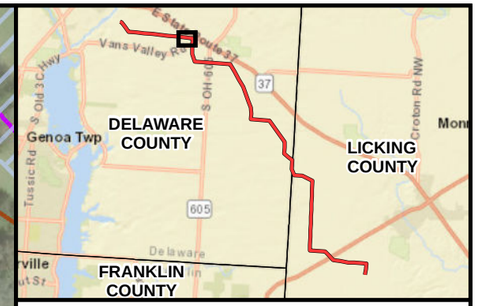

Legend

- Structure
- Wetland Data Point
- Upland Data Point
- Vassell - Green Chapel North Route
- NHD Stream (USGS)
- Delineated PFO Wetland
- Delineated PSS Wetland
- Project Survey Area
- NWI Wetland (USFWS)
- NFHL 100-Year Floodplain (FEMA)
- HUC 12 (USGS)
- SSURGO Soil Map Unit (NRCS)
- Hydric SSURGO Soil Map Unit (NRCS)

Soil Map Unit Description

BeA - Bennington silt loam, 0 to 2 percent slopes

BeB - Bennington silt loam, 2 to 6 percent slopes

PwA - Pewamo silty clay loam, 0 to 1 percent slopes

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 2
SHEET 5 OF 29
SOIL MAP AND
NATIONAL WETLANDS INVENTORY MAP

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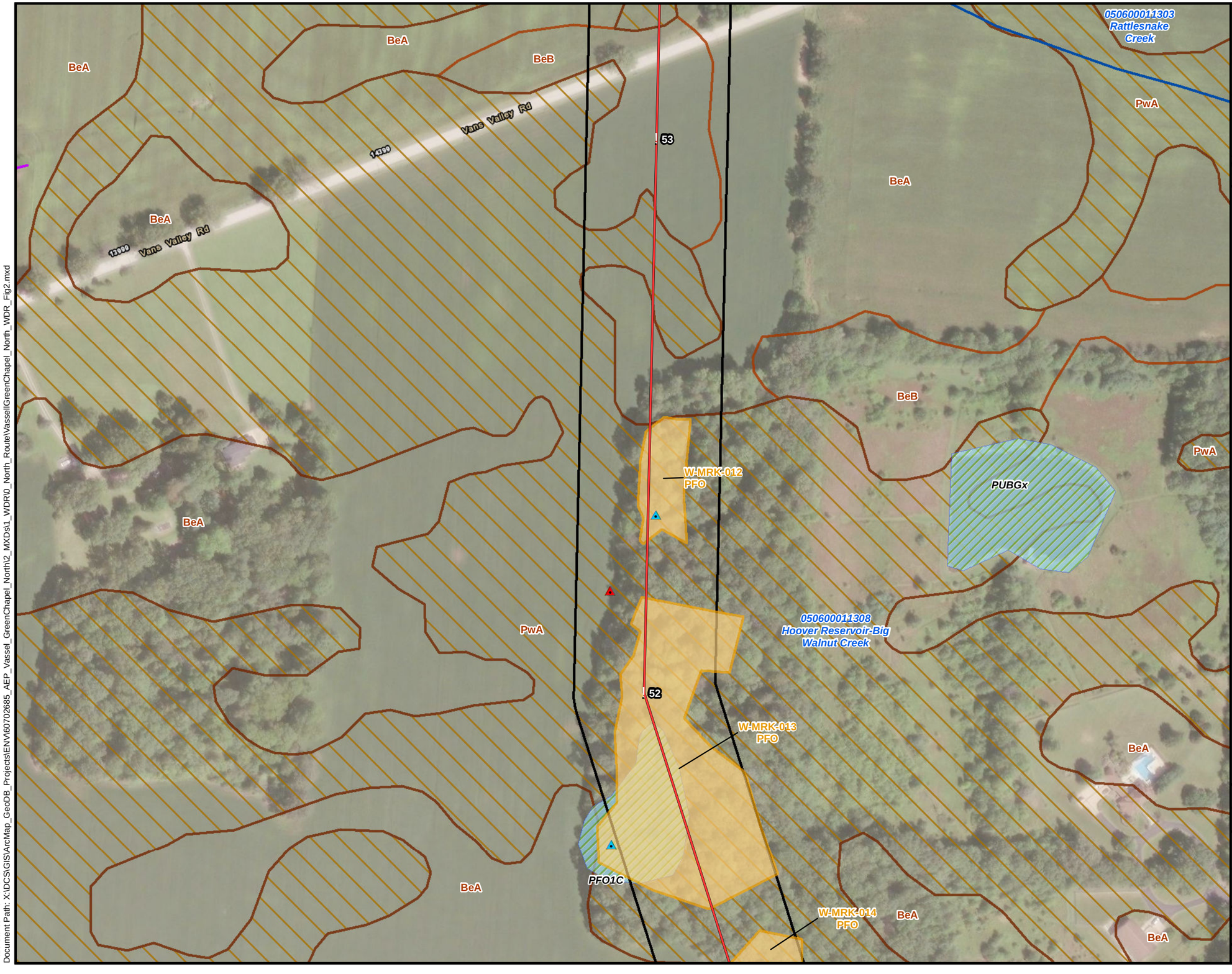

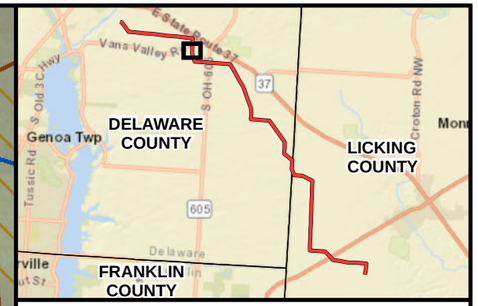

Legend

- Structure
- Wetland Data Point
- Upland Data Point
- Vassell - Green Chapel North Route
- NHD Stream (USGS)
- Delineated PFO Wetland
- Project Survey Area
- NWI Wetland (USFWS)
- HUC 12 (USGS)
- SSURGO Soil Map Unit (NRCS)
- Hydric SSURGO Soil Map Unit (NRCS)

Soil Map Unit Description

BeA - Bennington silt loam, 0 to 2 percent slopes

BeB - Bennington silt loam, 2 to 6 percent slopes

PwA - Pewamo silty clay loam, 0 to 1 percent slopes

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 2
SHEET 6 OF 29
SOIL MAP AND
NATIONAL WETLANDS INVENTORY MAP

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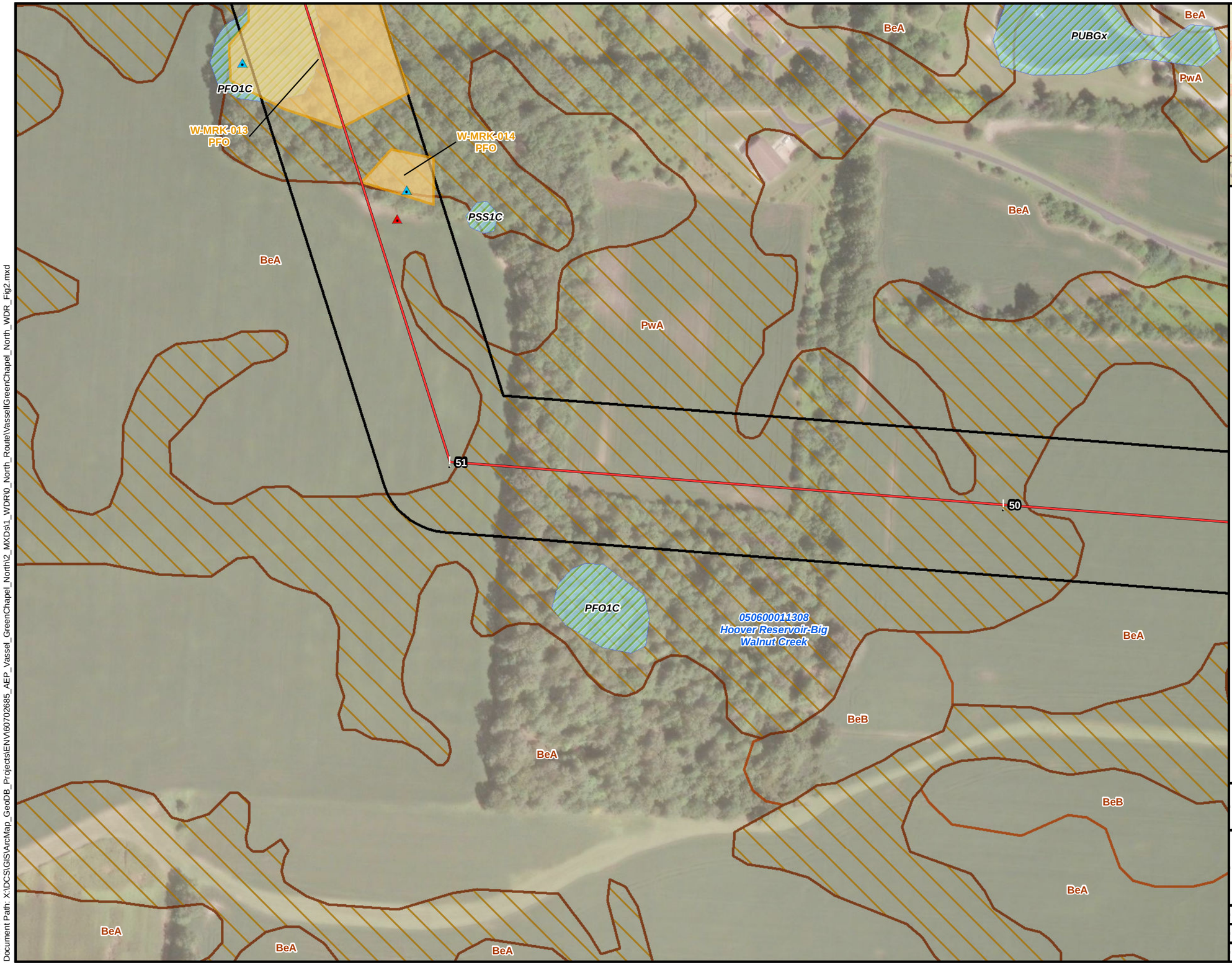

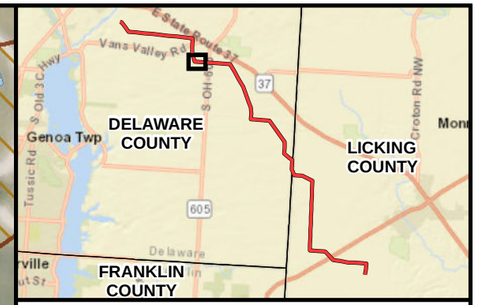

Legend

- Structure
- Wetland Data Point
- Upland Data Point
- Vassell - Green Chapel North Route
- Delineated PFO Wetland
- Project Survey Area
- NWI Wetland (USFWS)
- HUC 12 (USGS)
- SSURGO Soil Map Unit (NRCS)
- Hydric SSURGO Soil Map Unit (NRCS)

Soil Map Unit Description

BeA - Bennington silt loam, 0 to 2 percent slopes

PwA - Pewamo silty clay loam, 0 to 1 percent slopes

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 2
SHEET 7 OF 29
SOIL MAP AND
NATIONAL WETLANDS INVENTORY MAP

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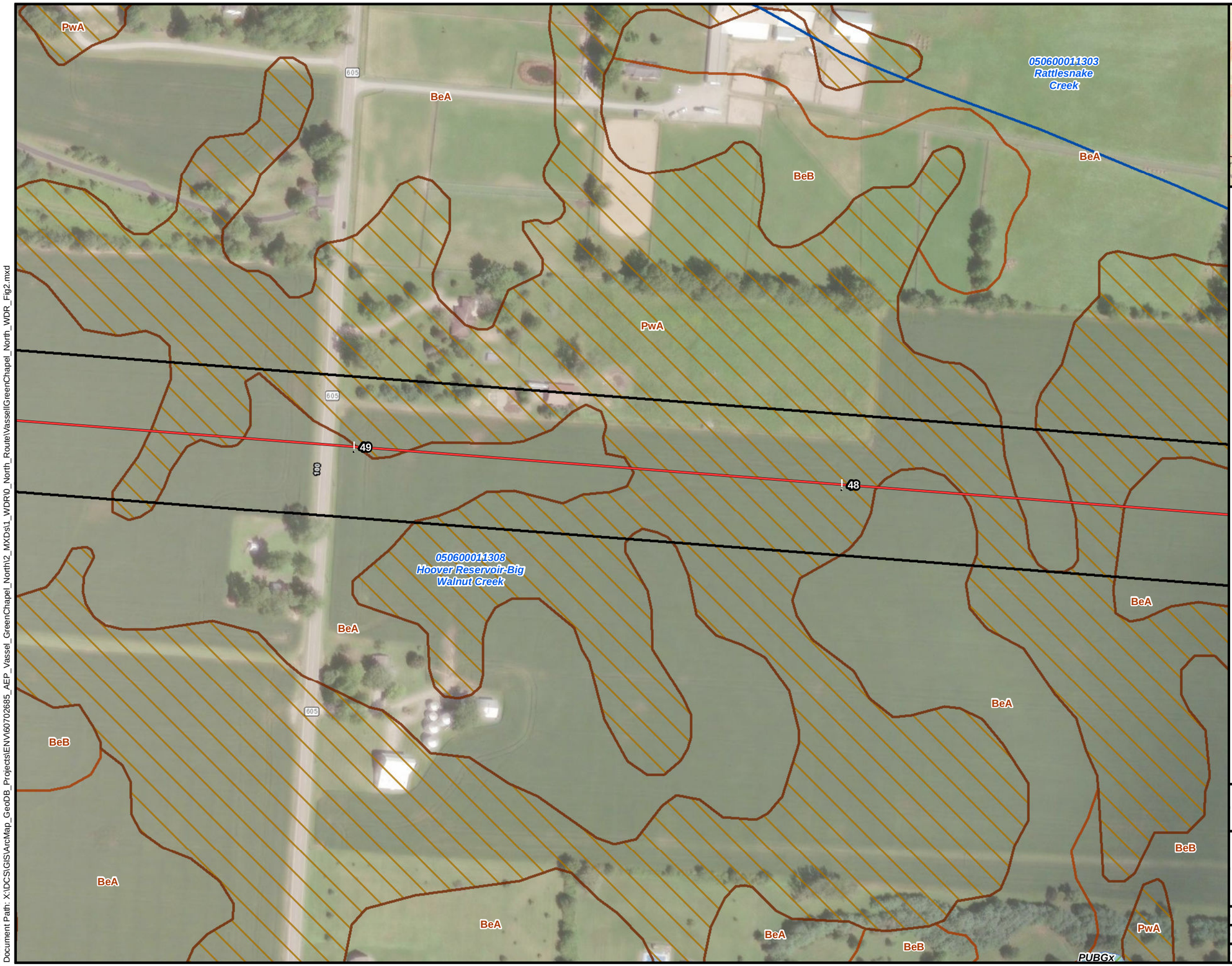



Legend

- Structure
- Vassell - Green Chapel North Route
- Project Survey Area
- NWI Wetland (USFWS)
- HUC 12 (USGS)
- SSURGO Soil Map Unit (NRCS)
- Hydric SSURGO Soil Map Unit (NRCS)

Soil Map Unit Description

BeA - Bennington silt loam, 0 to 2 percent slopes

PwA - Pewamo silty clay loam, 0 to 1 percent slopes

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 2
SHEET 8 OF 29
SOIL MAP AND
NATIONAL WETLANDS INVENTORY MAP

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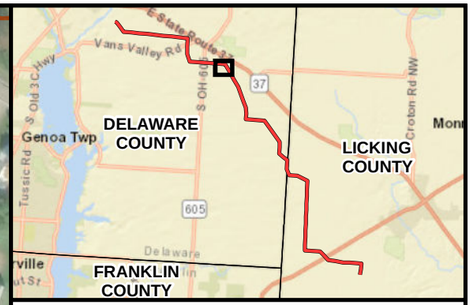

Legend

- Structure
- Upland Data Point
- Vassell - Green Chapel North Route
- NHD Stream (USGS)
- Project Survey Area
- NWI Wetland (USFWS)
- HUC 12 (USGS)
- SSURGO Soil Map Unit (NRCS)
- Hydric SSURGO Soil Map Unit (NRCS)

Soil Map Unit Description

BeA - Bennington silt loam, 0 to 2 percent slopes

PwA - Pewamo silty clay loam, 0 to 1 percent slopes

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 2
SHEET 9 OF 29
SOIL MAP AND
NATIONAL WETLANDS INVENTORY MAP

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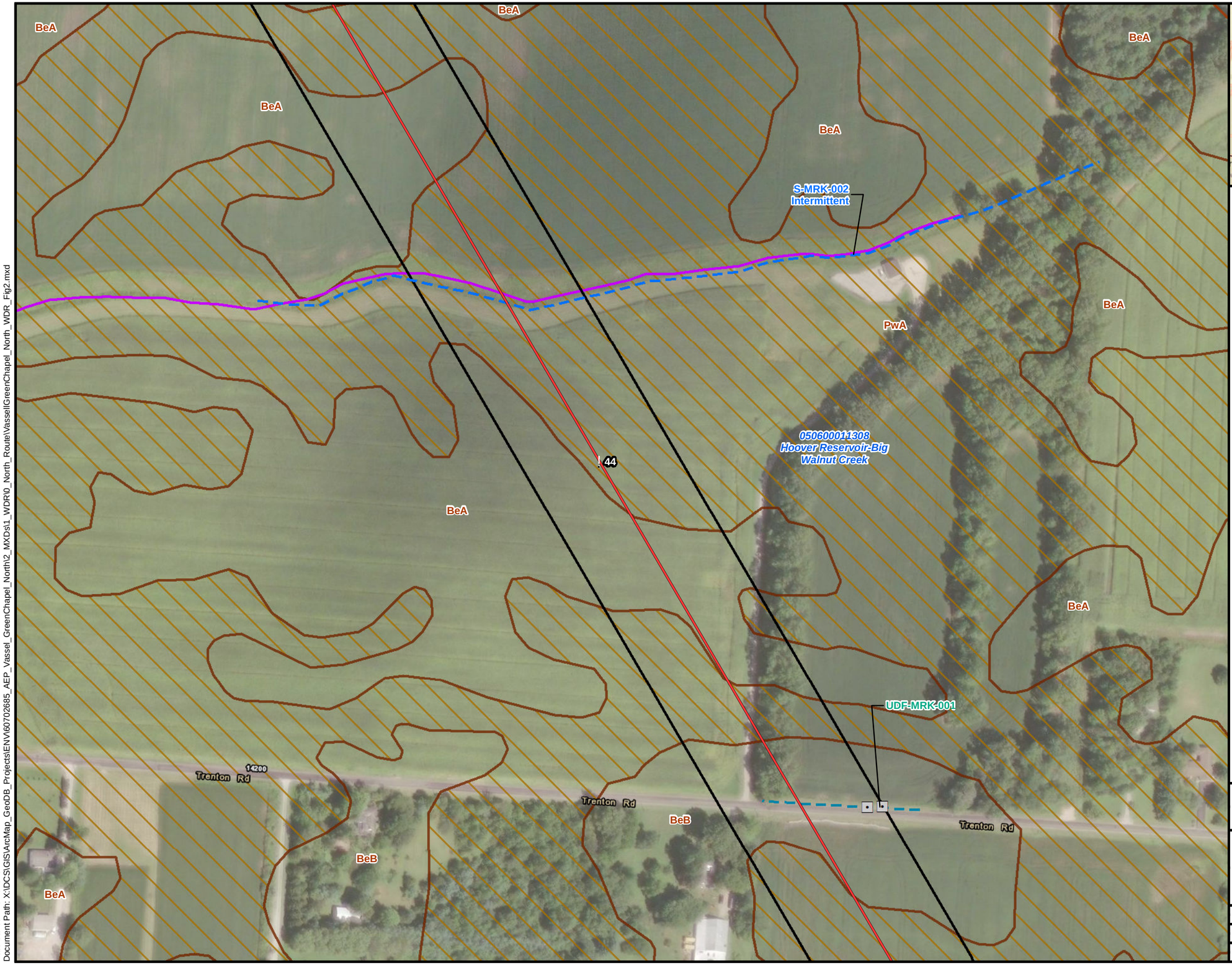



Legend

- Structure
- Culvert
- Vassell - Green Chapel North Route
- Delineated Upland Drainage Feature
- Delineated Intermittent Stream
- NHD Stream (USGS)
- Project Survey Area
- HUC 12 (USGS)
- SSURGO Soil Map Unit (NRCS)
- Hydric SSURGO Soil Map Unit (NRCS)

Soil Map Unit Description

BeA - Bennington silt loam, 0 to 2 percent slopes

BeB - Bennington silt loam, 2 to 6 percent slopes

PwA - Pewamo silty clay loam, 0 to 1 percent slopes

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 2
SHEET 10 OF 29
SOIL MAP AND
NATIONAL WETLANDS INVENTORY MAP

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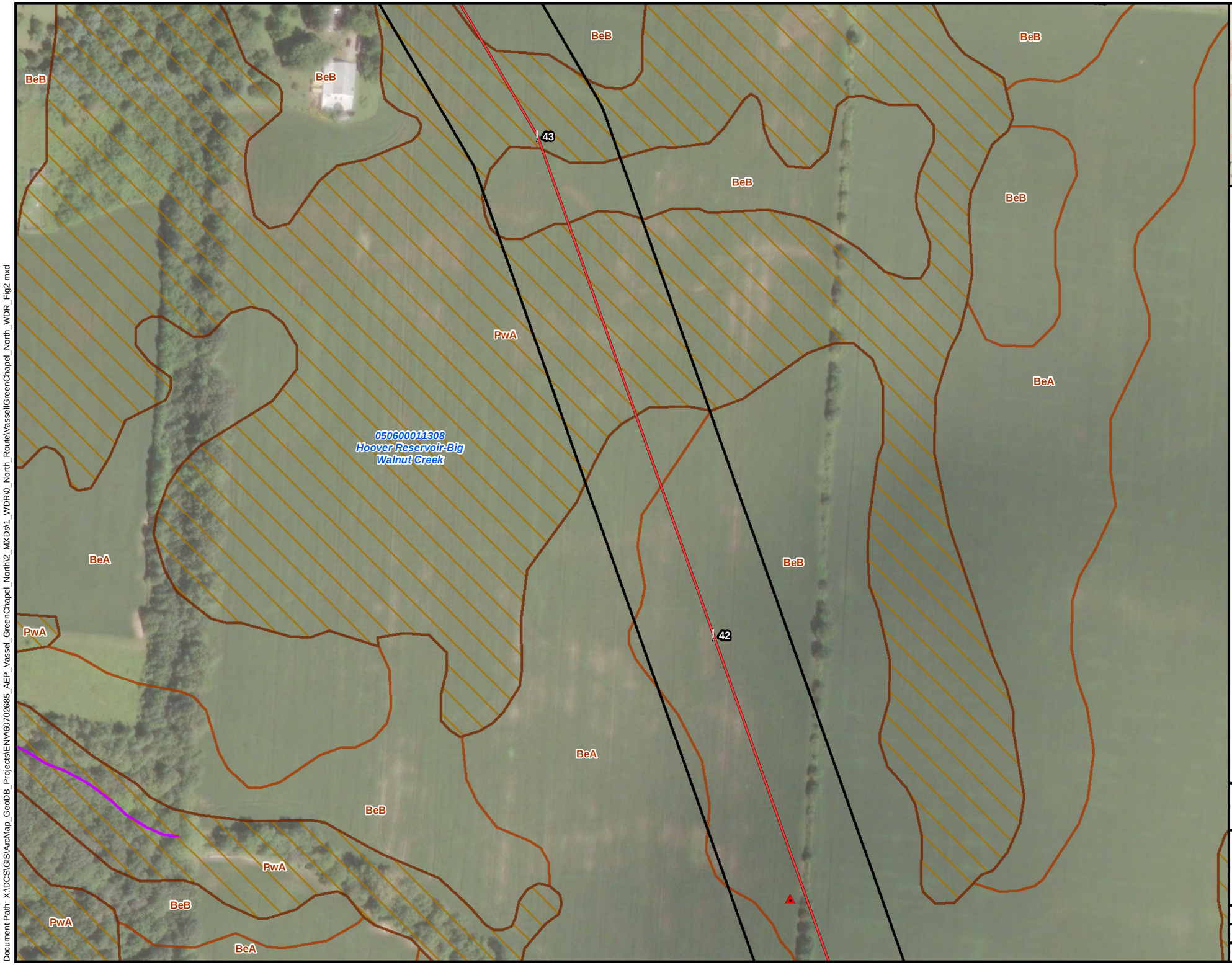

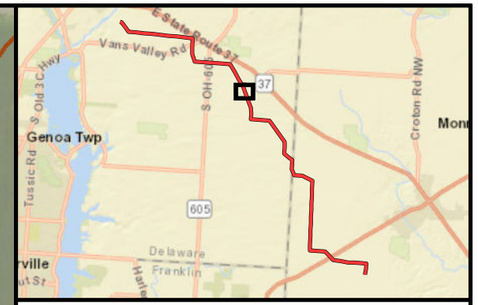

Legend

- Structure
- Upland Data Point
- Vassell - Green Chapel North Route
- NHD Stream (USGS)
- Project Survey Area
- HUC 12 (USGS)
- SSURGO Soil Map Unit (NRCS)
- Hydric SSURGO Soil Map Unit (NRCS)

Soil Map Unit Description

BeA - Bennington silt loam, 0 to 2 percent slopes

BeB - Bennington silt loam, 2 to 6 percent slopes

PwA - Pewamo silty clay loam, 0 to 1 percent slopes

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 2
SHEET 11 OF 29
SOIL MAP AND
NATIONAL WETLANDS INVENTORY MAP

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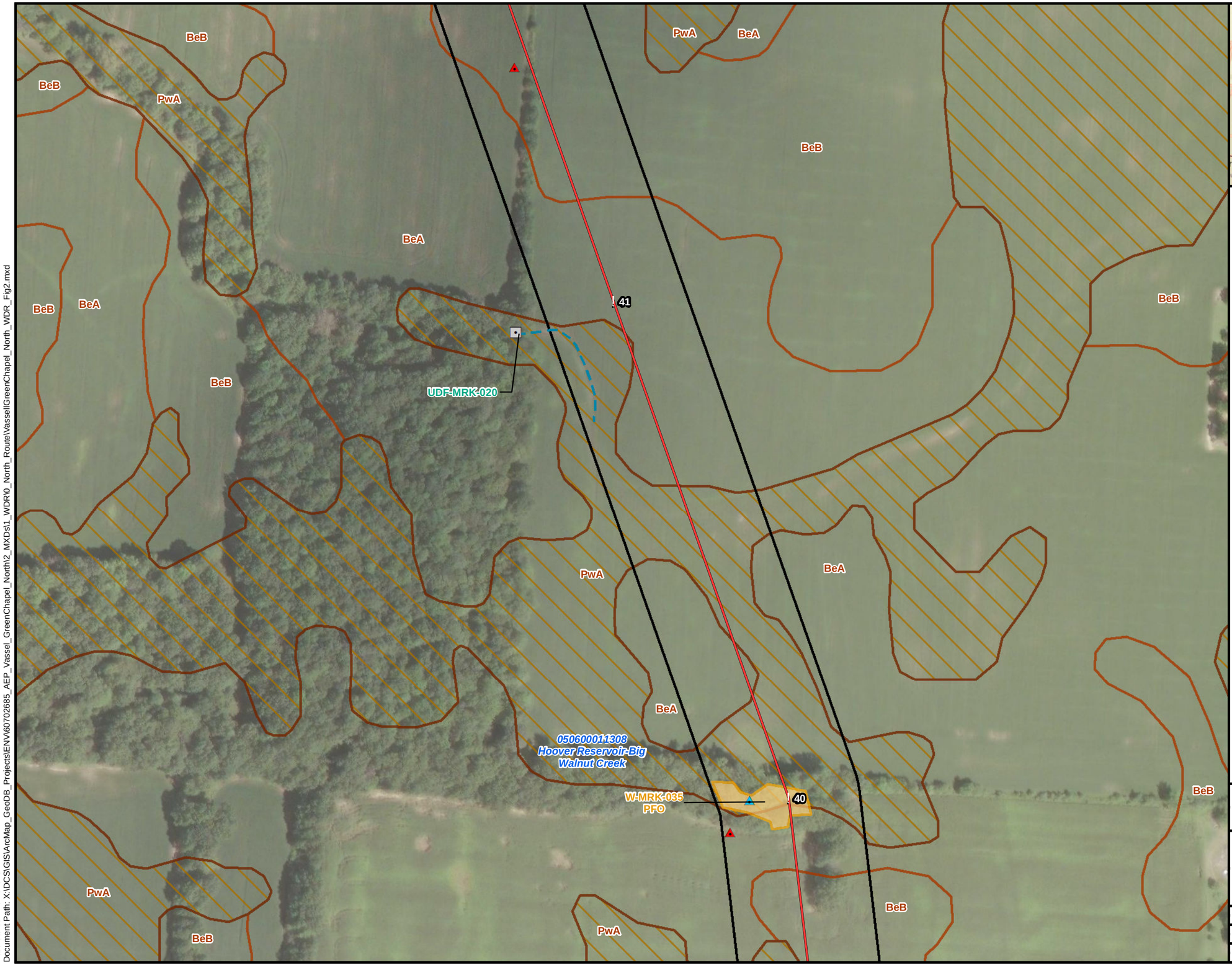

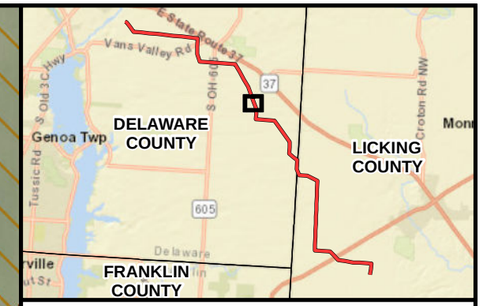

Legend

- Structure
- Wetland Data Point
- Upland Data Point
- Culvert
- Vassell - Green Chapel North Route
- Delineated Upland Drainage Feature
- Delineated PFO Wetland
- Project Survey Area
- HUC 12 (USGS)
- SSURGO Soil Map Unit (NRCS)
- Hydric SSURGO Soil Map Unit (NRCS)

Soil Map Unit Description

BeA - Bennington silt loam, 0 to 2 percent slopes

BeB - Bennington silt loam, 2 to 6 percent slopes

PwA - Pewamo silty clay loam, 0 to 1 percent slopes

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 2
SHEET 12 OF 29
SOIL MAP AND
NATIONAL WETLANDS INVENTORY MAP

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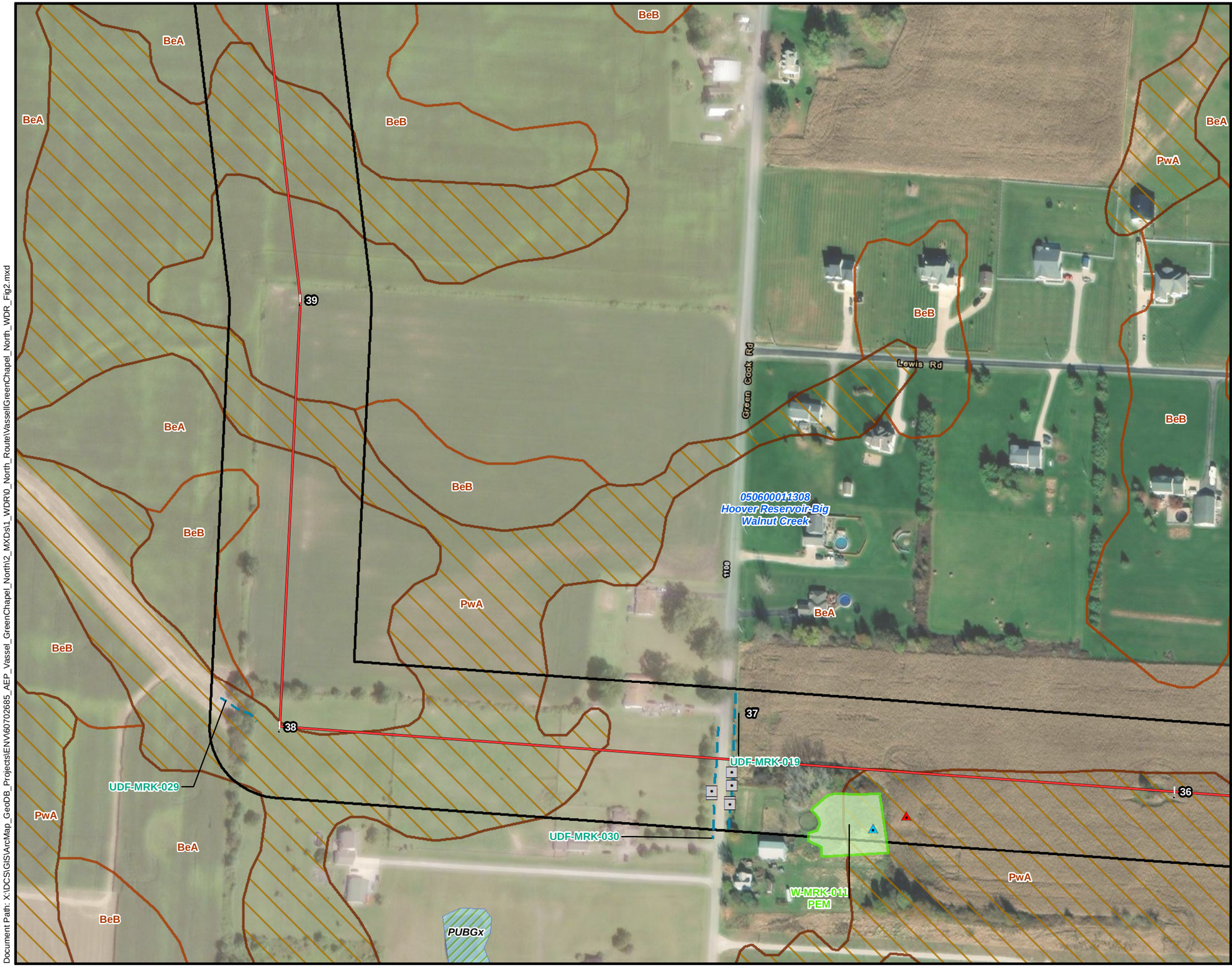

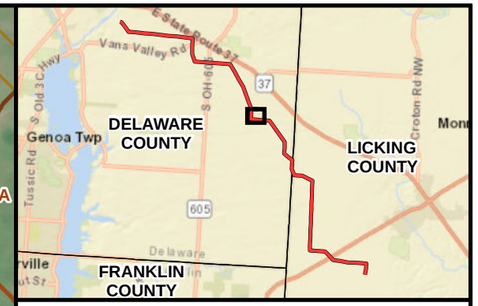

Legend

- Structure
- Wetland Data Point
- Upland Data Point
- Culvert
- Vassell - Green Chapel North Route
- Delineated Upland Drainage Feature
- Delineated PEM Wetland
- Project Survey Area
- NWI Wetland (USFWS)
- HUC 12 (USGS)
- SSURGO Soil Map Unit (NRCS)
- Hydric SSURGO Soil Map Unit (NRCS)

Soil Map Unit Description

BeA - Bennington silt loam, 0 to 2 percent slopes

BeB - Bennington silt loam, 2 to 6 percent slopes

PwA - Pewamo silty clay loam, 0 to 1 percent slopes

3

0 100 200 400

Feet

Vassell - Green Chapel North Project

FIGURE 2
SHEET 13 OF 29
SOIL MAP AND
NATIONAL WETLANDS INVENTORY MAP

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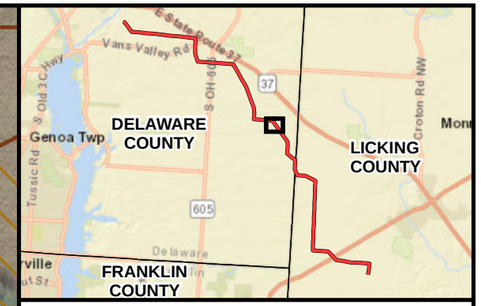

Legend

- Structure
- Vassell - Green Chapel North Route
- Project Survey Area
- NWI Wetland (USFWS)
- HUC 12 (USGS)
- SSURGO Soil Map Unit (NRCS)
- Hydric SSURGO Soil Map Unit (NRCS)

Soil Map Unit Description

BeA - Bennington silt loam, 0 to 2 percent slopes

PwA - Pewamo silty clay loam, 0 to 1 percent slopes

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 2
SHEET 14 OF 29
SOIL MAP AND
NATIONAL WETLANDS INVENTORY MAP

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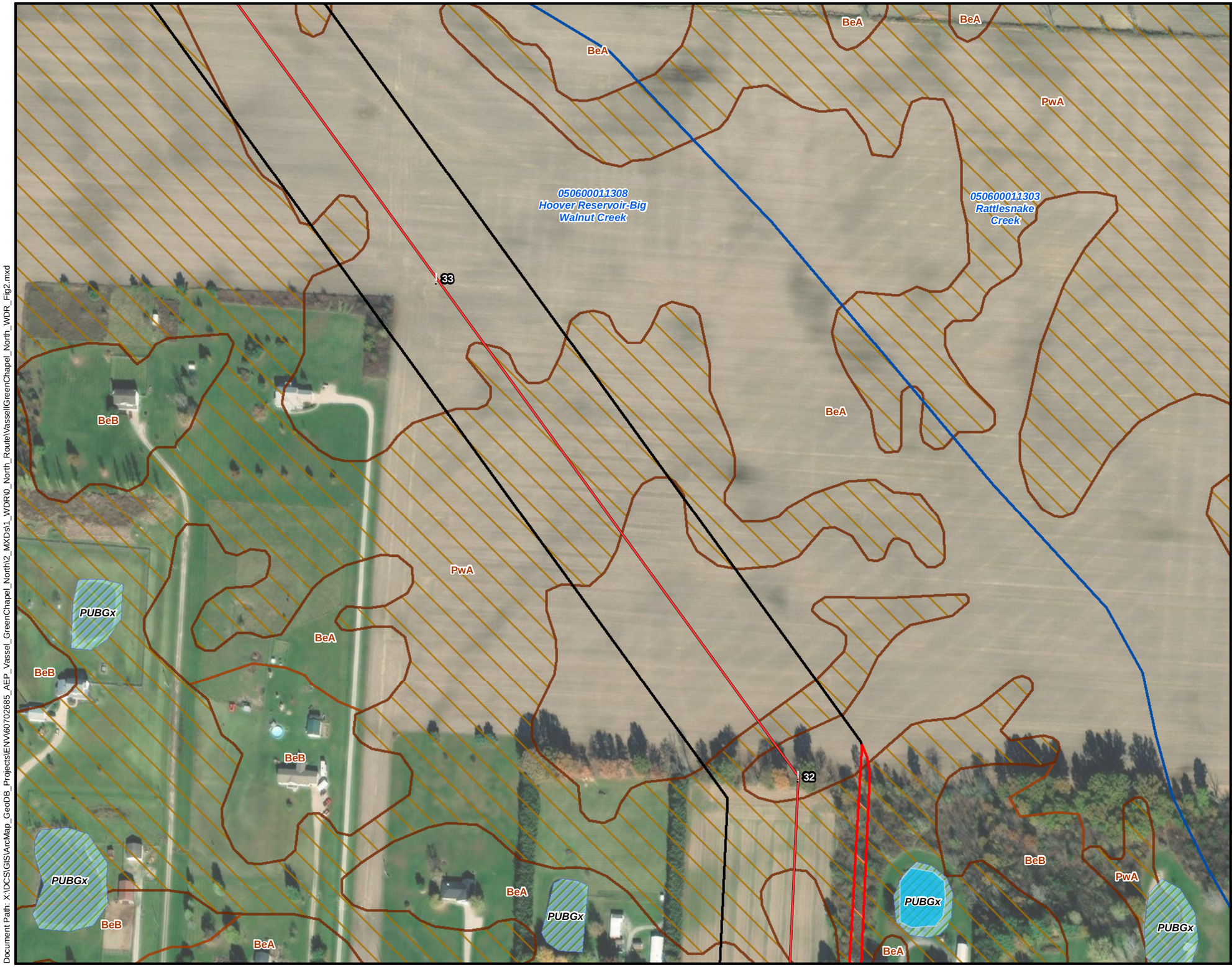

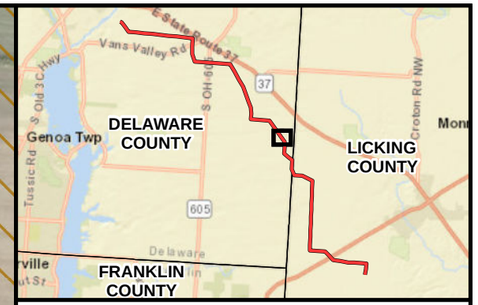

Legend

- Structure
- Vassell - Green Chapel North Route
- Area Not Surveyed due to Landowner Permissions
- Project Survey Area
- NWI Wetland (USFWS)
- NHD Waterbody (USGS)
- HUC 12 (USGS)
- SSURGO Soil Map Unit (NRCS)
- Hydric SSURGO Soil Map Unit (NRCS)

Soil Map Unit Description

BeA - Bennington silt loam, 0 to 2 percent slopes

PwA - Pewamo silty clay loam, 0 to 1 percent slopes

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 2
SHEET 15 OF 29
SOIL MAP AND
NATIONAL WETLANDS INVENTORY MAP

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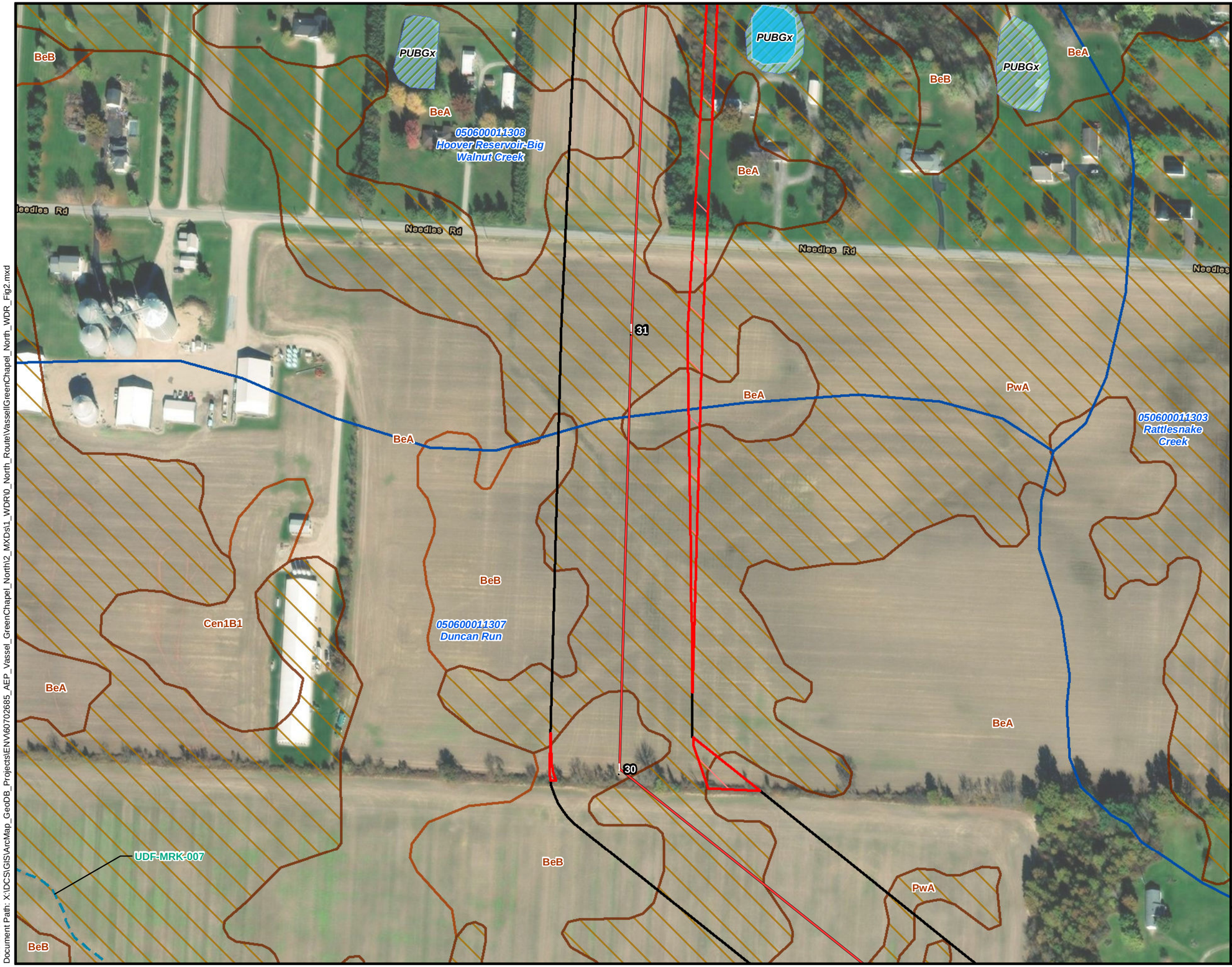

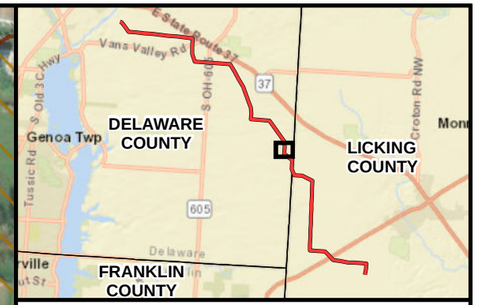

Legend

- Structure
- Vassell - Green Chapel North Route
- Delineated Upland Drainage Feature
- Area Not Surveyed due to Landowner Permissions
- Project Survey Area
- NWI Wetland (USFWS)
- NHD Waterbody (USGS)
- HUC 12 (USGS)
- SSURGO Soil Map Unit (NRCS)
- Hydric SSURGO Soil Map Unit (NRCS)

Soil Map Unit Description

BeA - Bennington silt loam, 0 to 2 percent slopes

BeB - Bennington silt loam, 2 to 6 percent slopes

PwA - Pewamo silty clay loam, 0 to 1 percent slopes

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 2
SHEET 16 OF 29
SOIL MAP AND
NATIONAL WETLANDS INVENTORY MAP

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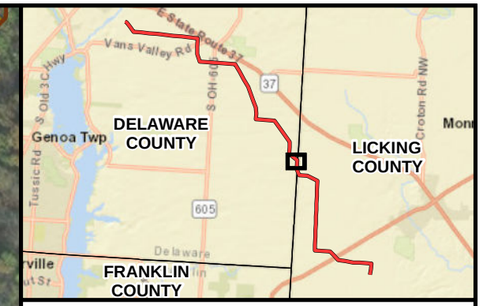

Legend

- Structure
- Upland Data Point
- Culvert
- Vassell - Green Chapel North Route
- Delineated Upland Drainage Feature
- Project Survey Area
- NWI Wetland (USFWS)
- HUC 12 (USGS)
- SSURGO Soil Map Unit (NRCS)
- Hydric SSURGO Soil Map Unit (NRCS)

Soil Map Unit Description

BeA - Bennington silt loam, 0 to 2 percent slopes

BeB - Bennington silt loam, 2 to 6 percent slopes

PwA - Pewamo silty clay loam, 0 to 1 percent slopes

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 2
SHEET 17 OF 29
SOIL MAP AND
NATIONAL WETLANDS INVENTORY MAP

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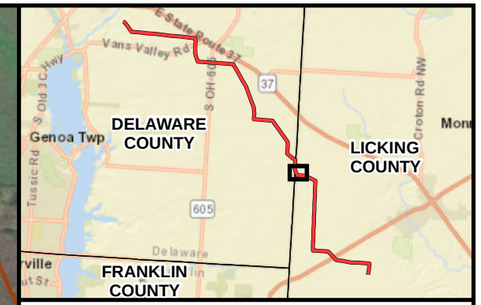

Legend

- Structure
- Culvert
- Vassell - Green Chapel North Route
- Delineated Upland Drainage Feature
- Area Not Surveyed due to Landowner Permissions
- Project Survey Area
- NWI Wetland (USFWS)
- HUC 12 (USGS)
- SSURGO Soil Map Unit (NRCS)
- Hydric SSURGO Soil Map Unit (NRCS)

Soil Map Unit Description

BeA - Bennington silt loam, 0 to 2 percent slopes

BeB - Bennington silt loam, 2 to 6 percent slopes

Cen1B1 - Centerburg silt loam, 2 to 6 percent slopes

Pe - Pewamo silty clay loam, low carbonate till, 0 to 2 percent slopes

PwA - Pewamo silty clay loam, 0 to 1 percent slopes

3

0 100 200 400

Feet

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Vassell - Green Chapel North Project

FIGURE 2
SHEET 18 OF 29
SOIL MAP AND
NATIONAL WETLANDS INVENTORY MAP

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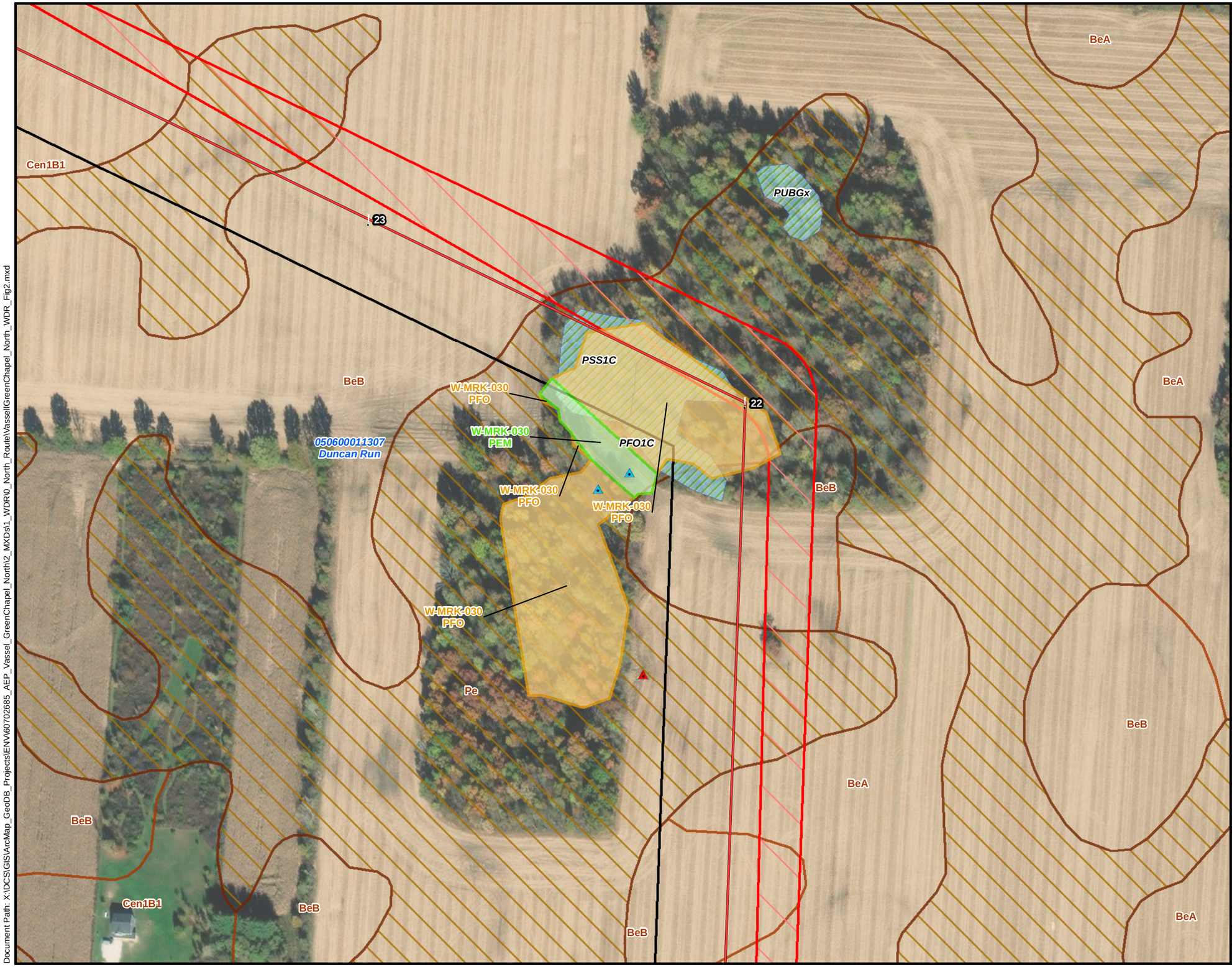

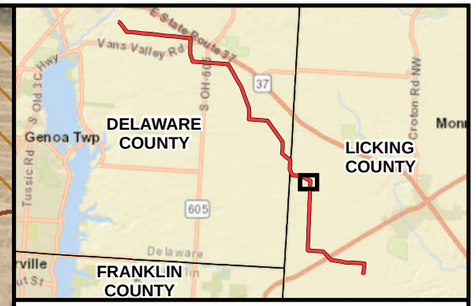

Legend

- Structure
- Wetland Data Point
- Upland Data Point
- Vassell - Green Chapel North Route
- Delineated PEM Wetland
- Delineated PFO Wetland
- Area Not Surveyed due to Landowner Permissions
- Project Survey Area
- NWI Wetland (USFWS)
- HUC 12 (USGS)
- SSURGO Soil Map Unit (NRCS)
- Hydric SSURGO Soil Map Unit (NRCS)

Soil Map Unit Description

BeA - Bennington silt loam, 0 to 2 percent slopes

BeB - Bennington silt loam, 2 to 6 percent slopes

Cen1B1 - Centerburg silt loam, 2 to 6 percent slopes

Pe - Pewamo silty clay loam, low carbonate till, 0 to 2 percent slopes

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 2
SHEET 19 OF 29
SOIL MAP AND
NATIONAL WETLANDS INVENTORY MAP

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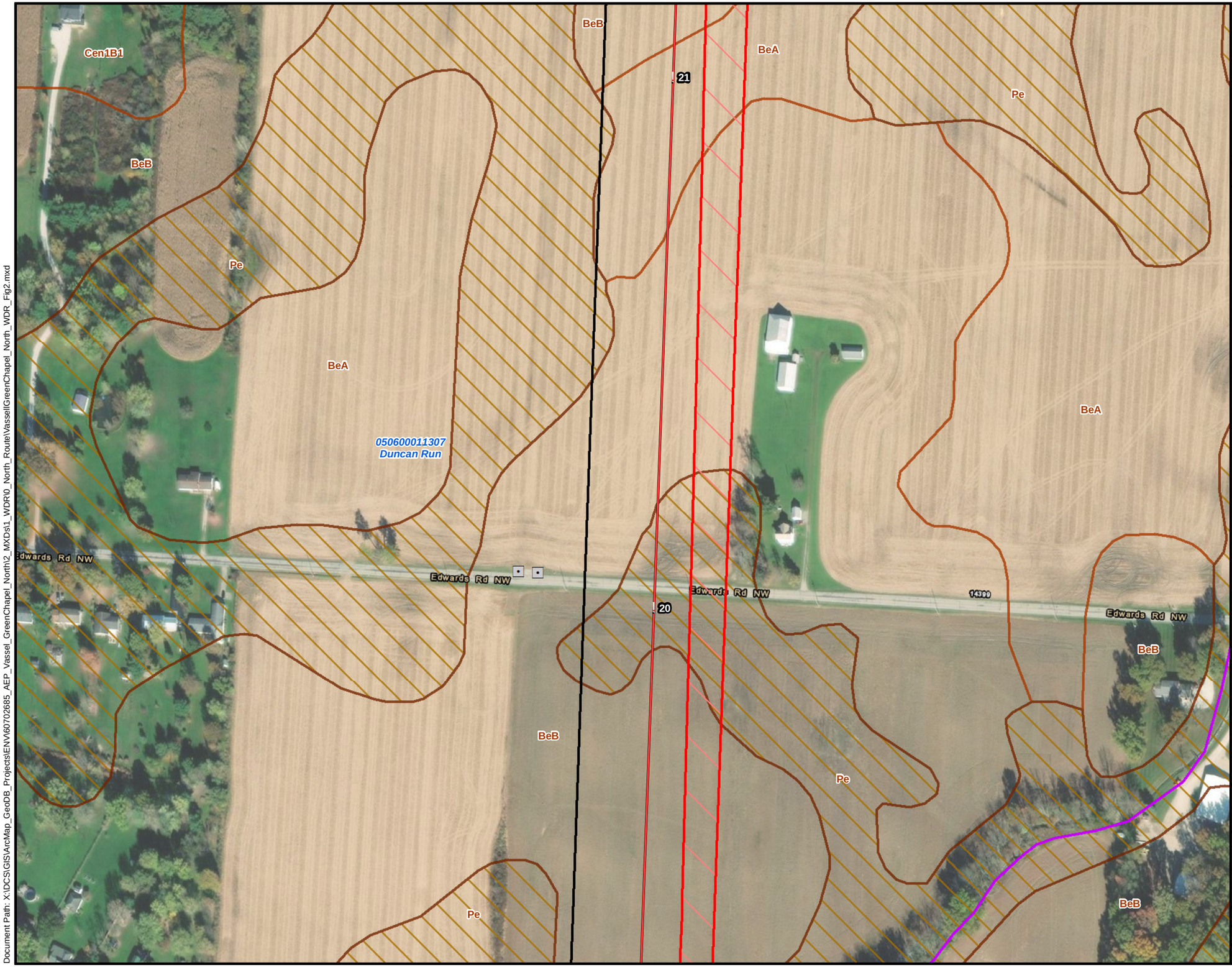

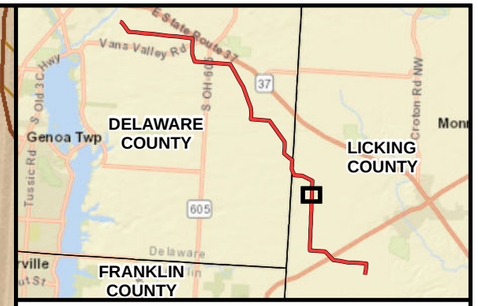

Legend

- Structure
- Culvert
- Vassell - Green Chapel North Route
- NHD Stream (USGS)
- Area Not Surveyed due to Landowner Permissions
- Project Survey Area
- HUC 12 (USGS)
- SSURGO Soil Map Unit (NRCS)
- Hydric SSURGO Soil Map Unit (NRCS)

Soil Map Unit Description

BeA - Bennington silt loam, 0 to 2 percent slopes

BeB - Bennington silt loam, 2 to 6 percent slopes

Pe - Pewamo silty clay loam, low carbonate till, 0 to 2 percent slopes

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 2
SHEET 20 OF 29
SOIL MAP AND
NATIONAL WETLANDS INVENTORY MAP

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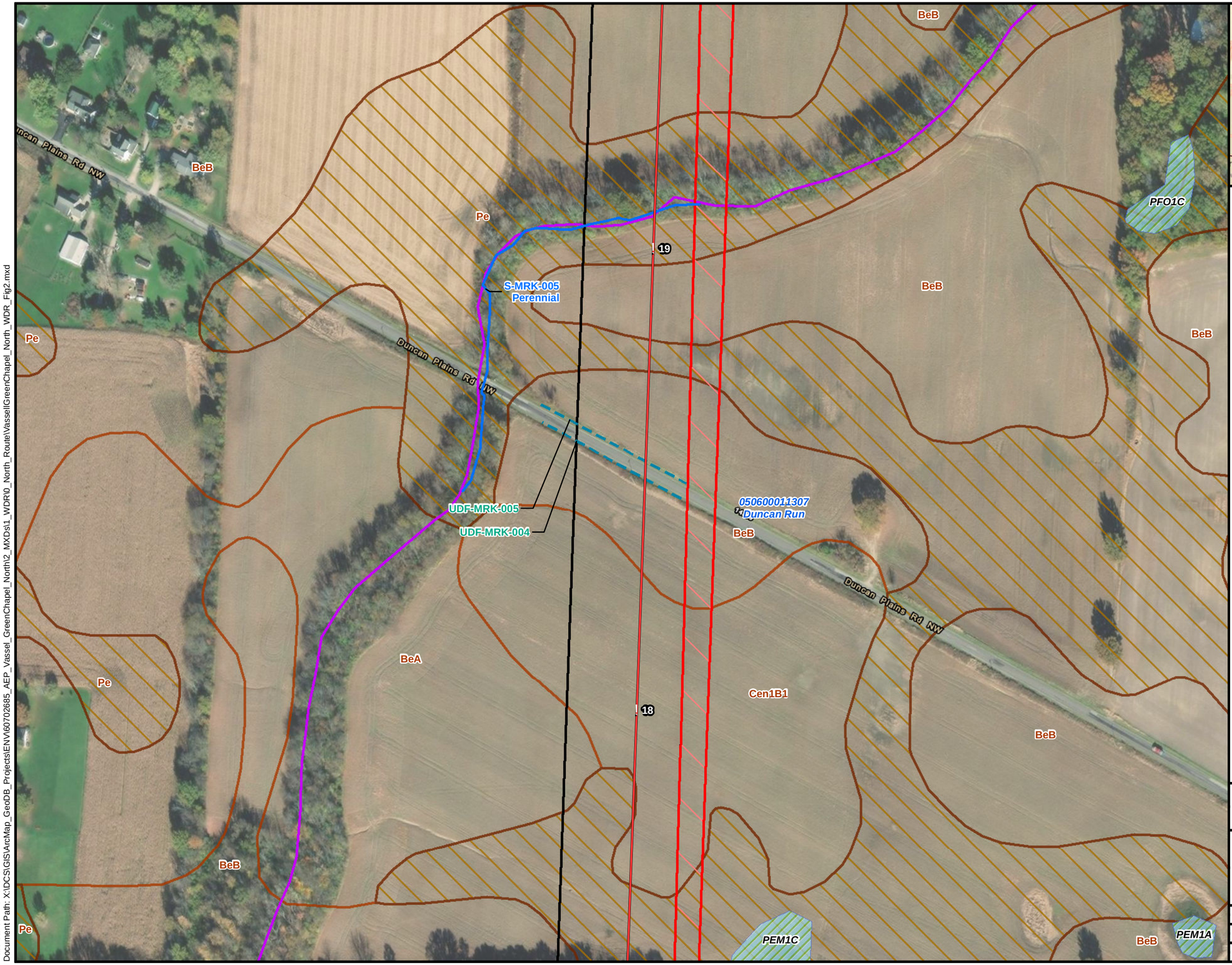

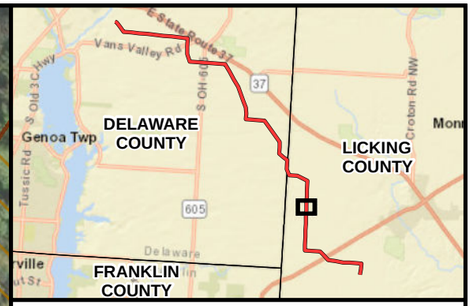

Legend

- Structure
- Vassell - Green Chapel North Route
- Delineated Upland Drainage Feature
- Delineated Perennial Stream
- NHD Stream (USGS)
- Area Not Surveyed due to Landowner Permissions
- Project Survey Area
- NWI Wetland (USFWS)
- HUC 12 (USGS)
- SSURGO Soil Map Unit (NRCS)
- Hydric SSURGO Soil Map Unit (NRCS)

Soil Map Unit Description

BeA - Bennington silt loam, 0 to 2 percent slopes

BeB - Bennington silt loam, 2 to 6 percent slopes

Cen1B1 - Centerburg silt loam, 2 to 6 percent slopes

Pe - Pewamo silty clay loam, low carbonate till, 0 to 2 percent slopes

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 2
SHEET 21 OF 29
SOIL MAP AND
NATIONAL WETLANDS INVENTORY MAP

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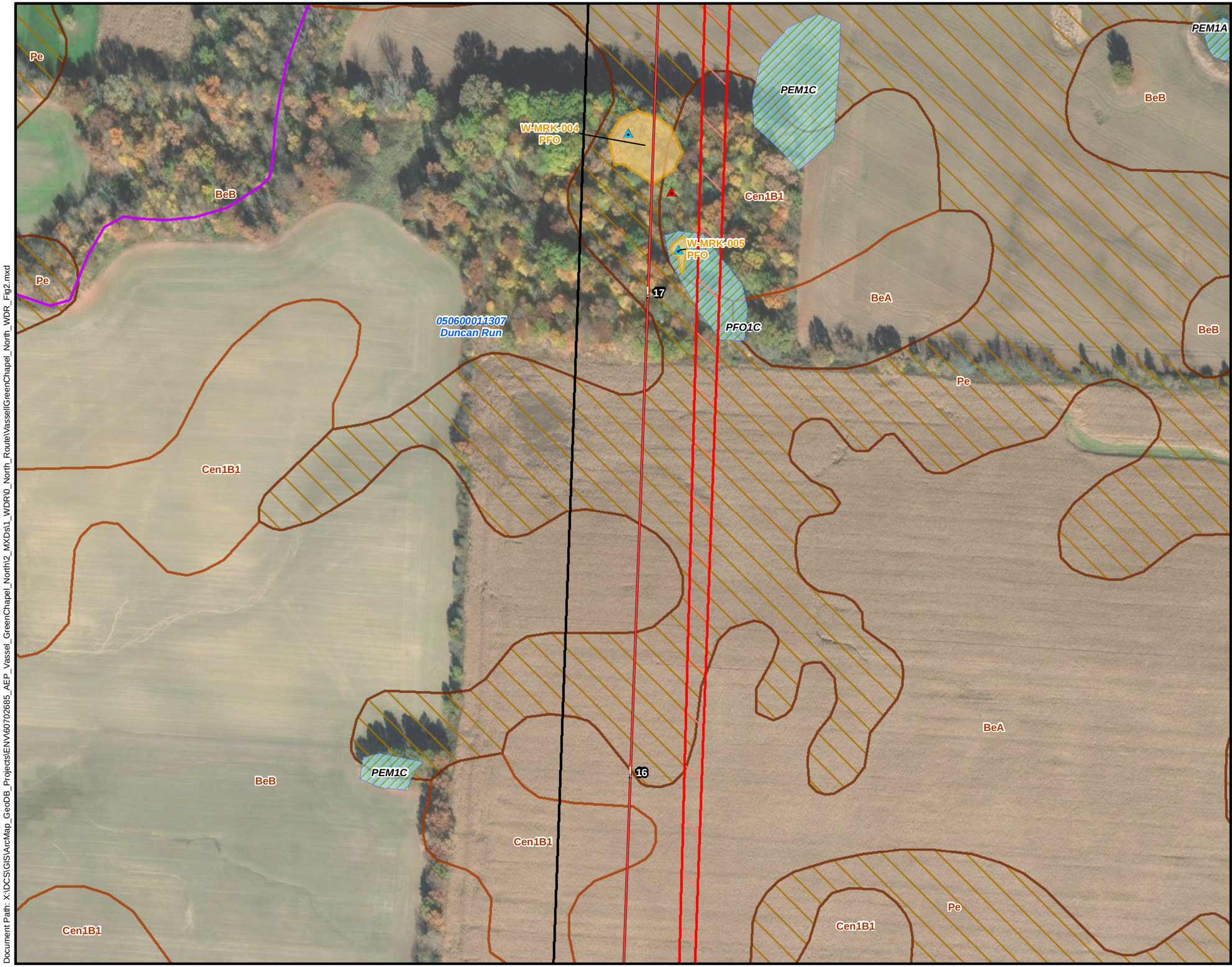

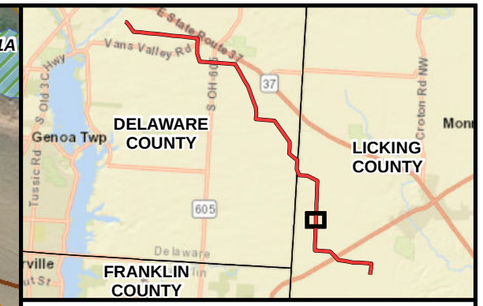

Legend

- Structure
- Wetland Data Point
- Upland Data Point
- Vassell - Green Chapel North Route
- NHD Stream (USGS)
- Delineated PFO Wetland
- Area Not Surveyed due to Landowner Permissions
- Project Survey Area
- NWI Wetland (USFWS)
- HUC 12 (USGS)
- SSURGO Soil Map Unit (NRCS)
- Hydric SSURGO Soil Map Unit (NRCS)

Soil Map Unit Description

BeA - Bennington silt loam, 0 to 2 percent slopes

BeB - Bennington silt loam, 2 to 6 percent slopes

Cen1B1 - Centerburg silt loam, 2 to 6 percent slopes

Pe - Pewamo silty clay loam, low carbonate till, 0 to 2 percent slopes

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 2
SHEET 22 OF 29
SOIL MAP AND
NATIONAL WETLANDS INVENTORY MAP

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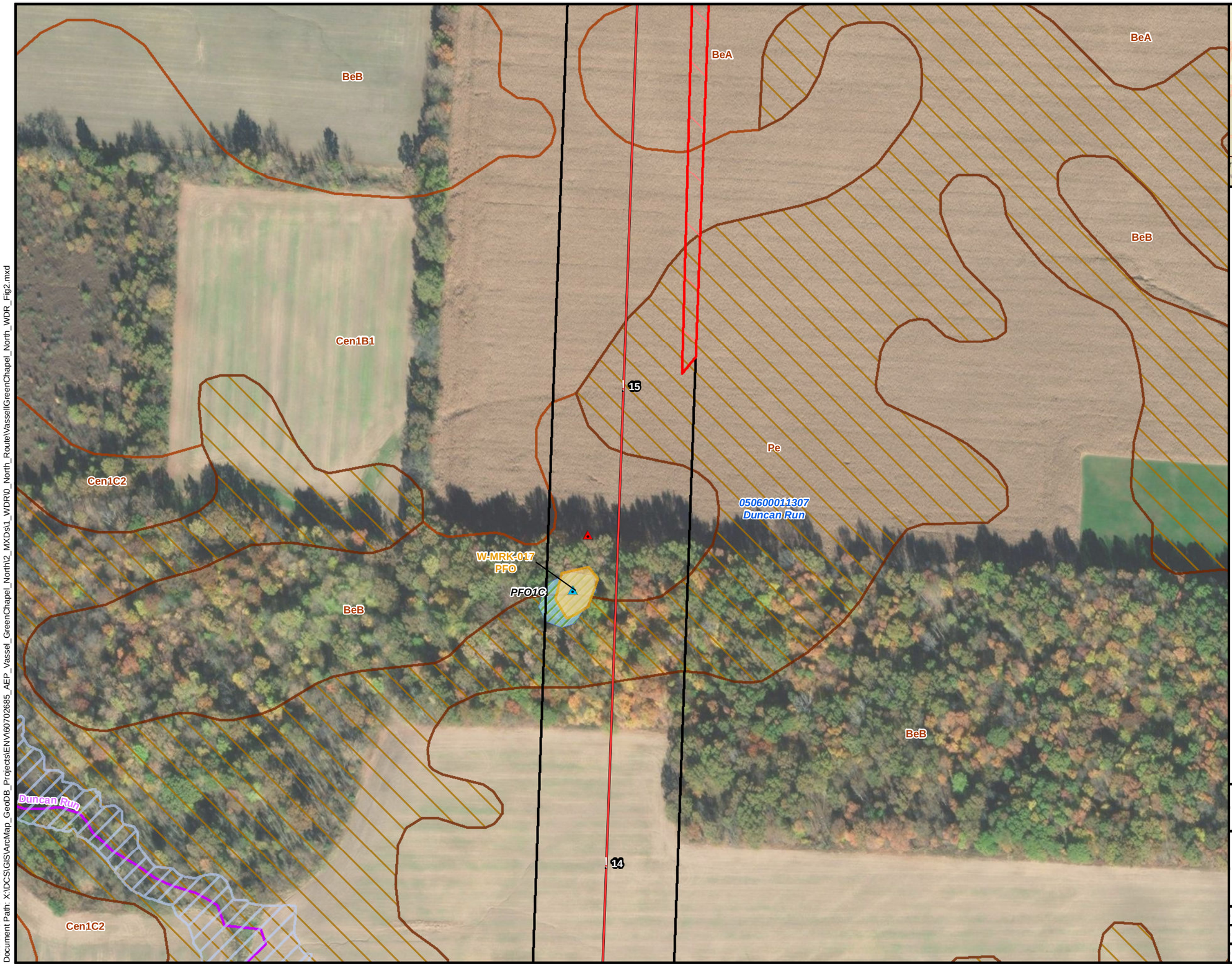

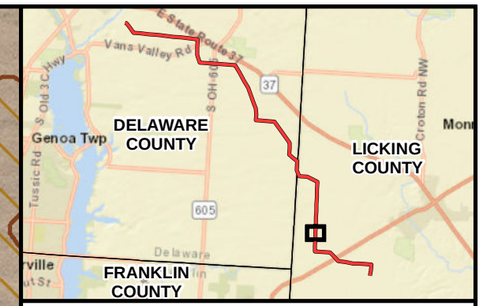

Legend

- Structure
- Wetland Data Point
- Upland Data Point
- Vassell - Green Chapel North Route
- NHD Stream (USGS)
- Delineated PFO Wetland
- Area Not Surveyed due to Landowner Permissions
- Project Survey Area
- NWI Wetland (USFWS)
- NFHL 100-Year Floodplain (FEMA)
- HUC 12 (USGS)
- SSURGO Soil Map Unit (NRCS)
- Hydric SSURGO Soil Map Unit (NRCS)

Soil Map Unit Description

BeA - Bennington silt loam, 0 to 2 percent slopes

BeB - Bennington silt loam, 2 to 6 percent slopes

Cen1B1 - Centerburg silt loam, 2 to 6 percent slopes

Pe - Pewamo silty clay loam, low carbonate till, 0 to 2 percent slopes

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 2
SHEET 23 OF 29
SOIL MAP AND
NATIONAL WETLANDS INVENTORY MAP

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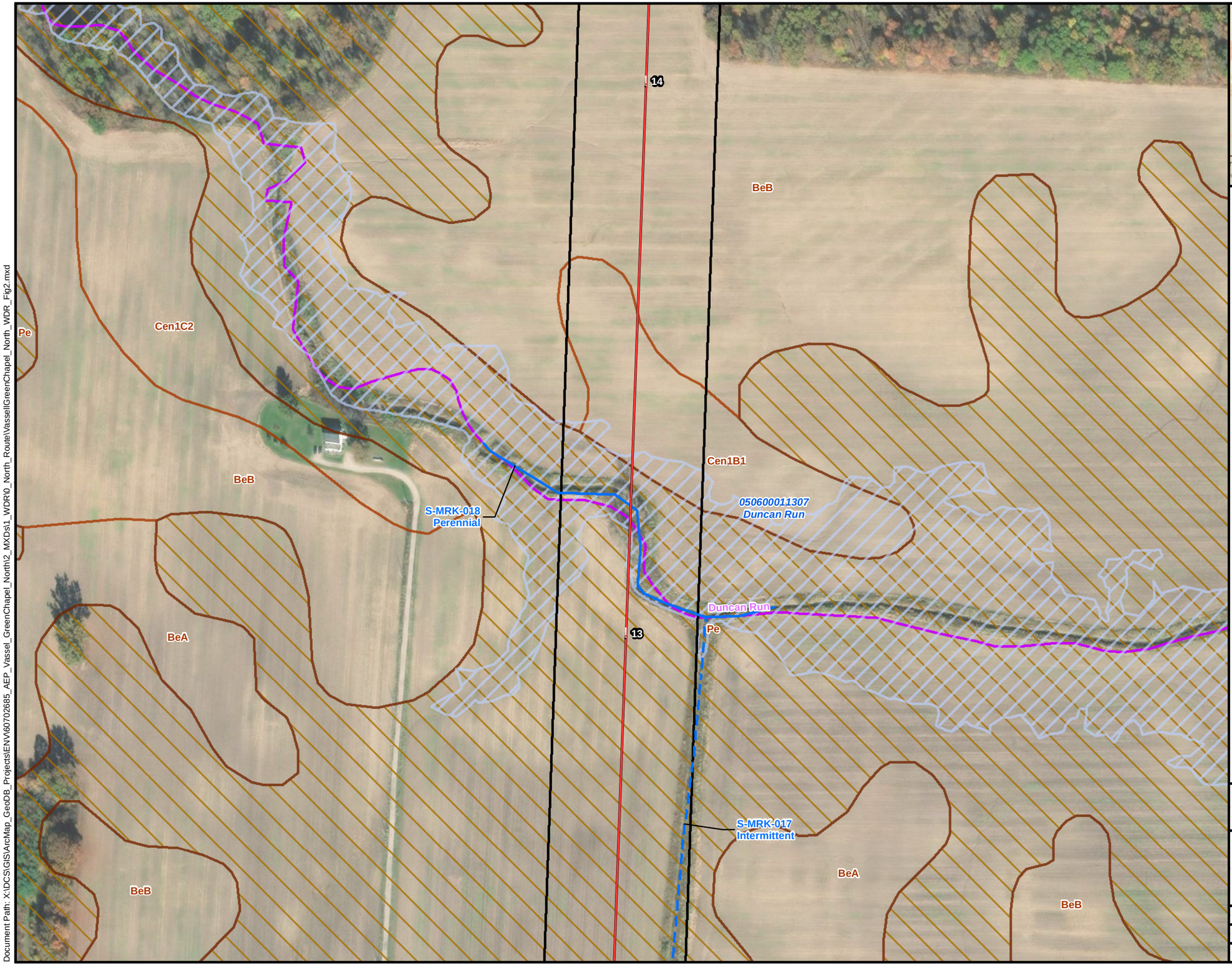

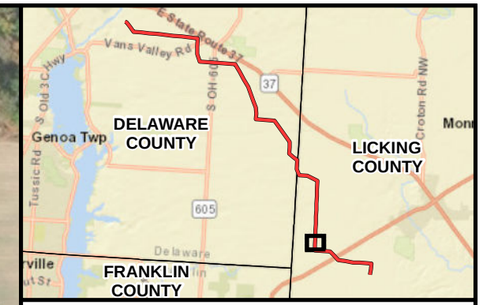

Legend

- Structure
- Vassell - Green Chapel North Route
- Delineated Intermittent Stream
- Delineated Perennial Stream
- NHD Stream (USGS)
- Project Survey Area
- NFHL 100-Year Floodplain (FEMA)
- HUC 12 (USGS)
- SSURGO Soil Map Unit (NRCS)
- Hydric SSURGO Soil Map Unit (NRCS)

Soil Map Unit Description

BeB - Bennington silt loam, 2 to 6 percent slopes

Cen1B1 - Centerburg silt loam, 2 to 6 percent slopes

Pe - Pewamo silty clay loam, low carbonate till, 0 to 2 percent slopes

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 2
SHEET 24 OF 29
SOIL MAP AND
NATIONAL WETLANDS INVENTORY MAP

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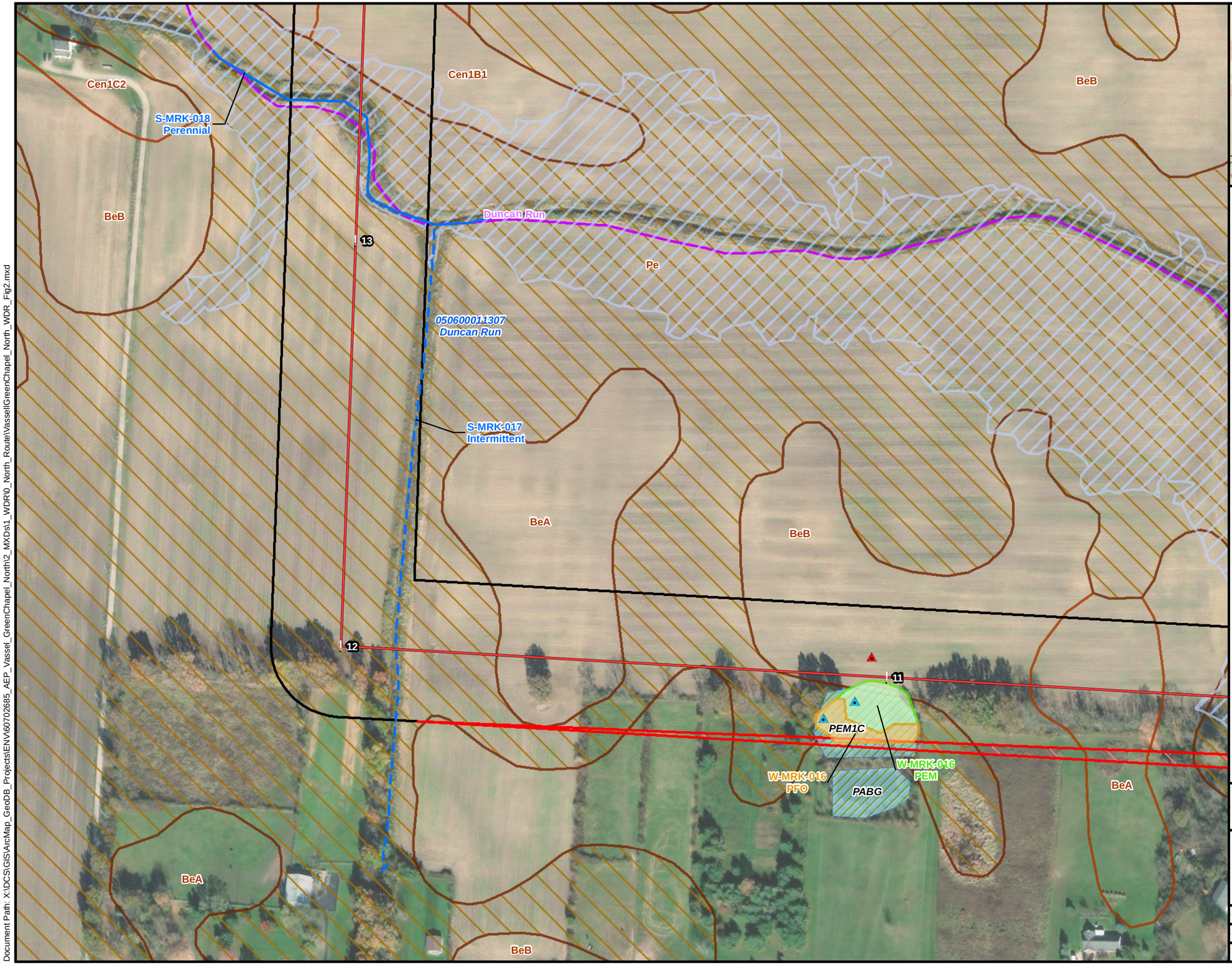

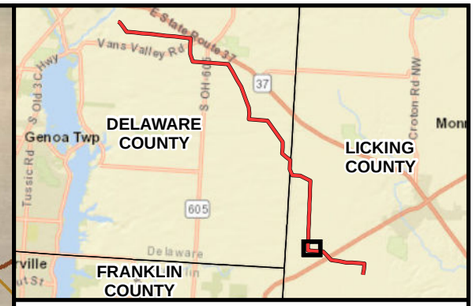

Legend

- Structure
- Wetland Data Point
- Upland Data Point
- Vassell - Green Chapel North Route
- Delineated Intermittent Stream
- Delineated Perennial Stream
- NHD Stream (USGS)
- Delineated PEM Wetland
- Delineated PFO Wetland
- Area Not Surveyed due to Landowner Permissions
- Project Survey Area
- NWI Wetland (USFWS)
- NFHL 100-Year Floodplain (FEMA)
- HUC 12 (USGS)
- SSURGO Soil Map Unit (NRCS)
- Hydric SSURGO Soil Map Unit (NRCS)

Soil Map Unit Description

BeA - Bennington silt loam, 0 to 2 percent slopes

BeB - Bennington silt loam, 2 to 6 percent slopes

Cen1B1 - Centerburg silt loam, 2 to 6 percent slopes

Pe - Pewamo silty clay loam, low carbonate till, 0 to 2 percent slopes

3

0 100 200 400

Feet

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Vassell - Green Chapel North Project

FIGURE 2
SHEET 25 OF 29
SOIL MAP AND
NATIONAL WETLANDS INVENTORY MAP

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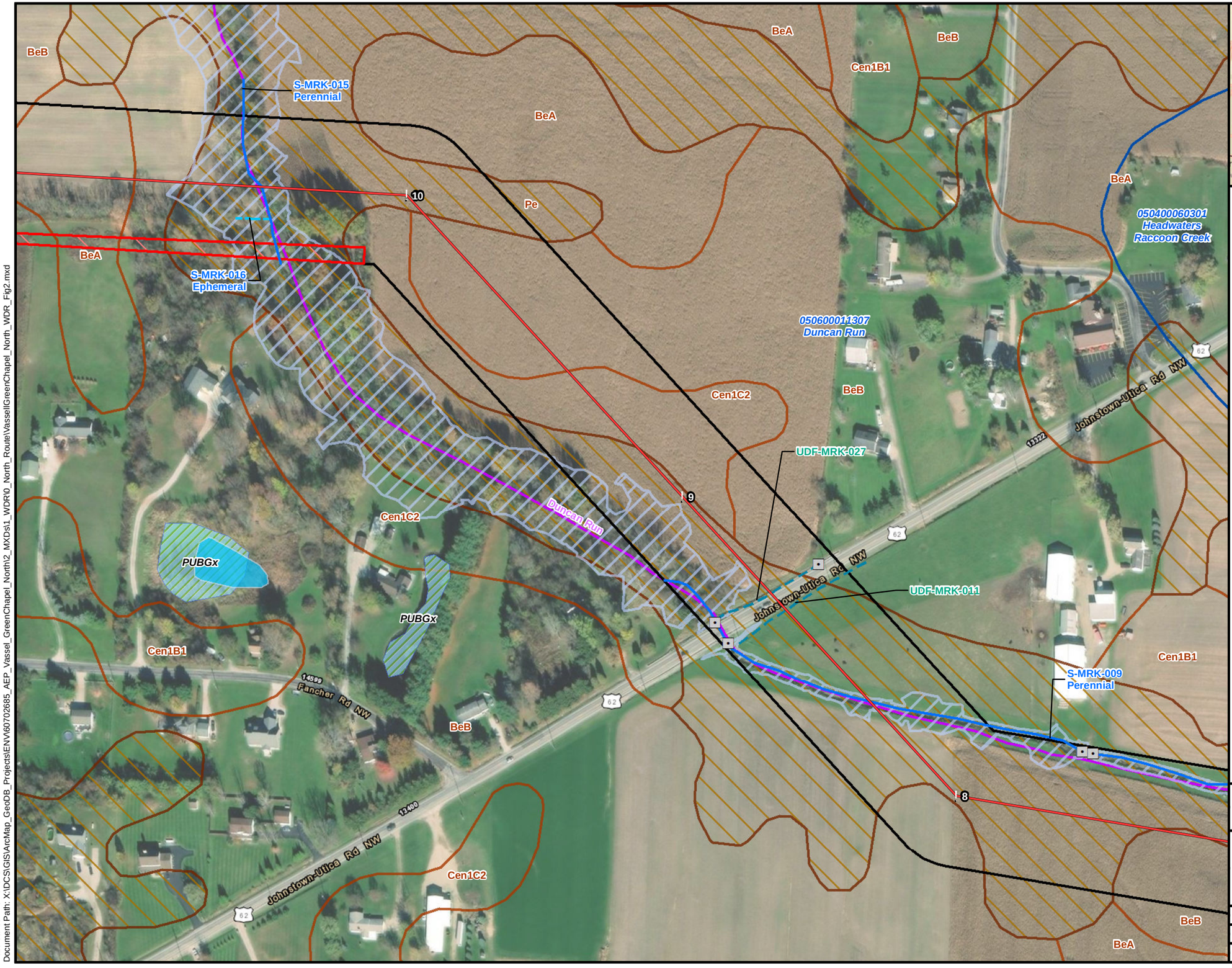

Legend

- Structure
- Culvert
- Vassell - Green Chapel North Route
- Delineated Upland Drainage Feature
- Delineated Ephemeral Stream
- Delineated Perennial Stream
- NHD Stream (USGS)
- Area Not Surveyed due to Landowner Permissions
- Project Survey Area
- NWI Wetland (USFWS)
- NHD Waterbody (USGS)
- NFHL 100-Year Floodplain (FEMA)
- HUC 12 (USGS)
- SSURGO Soil Map Unit (NRCS)
- Hydric SSURGO Soil Map Unit (NRCS)

Soil Map Unit Description

BeA - Bennington silt loam, 0 to 2 percent slopes

BeB - Bennington silt loam, 2 to 6 percent slopes

Cen1C2 - Centerburg silt loam, 6 to 12 percent slopes, eroded

Pe - Pewamo silty clay loam, low carbonate till, 0 to 2 percent slopes

3

0 100 200 400

Feet

Vassell - Green Chapel North Project

FIGURE 2
SHEET 26 OF 29
SOIL MAP AND
NATIONAL WETLANDS INVENTORY MAP

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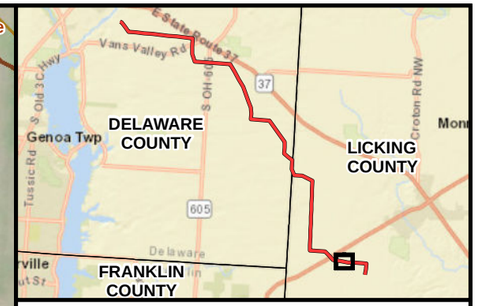

Legend

- Structure
- Wetland Data Point
- Upland Data Point
- Vassell - Green Chapel North Route
- Delineated Perennial Stream
- NHD Stream (USGS)
- Delineated PEM Wetland
- Project Survey Area
- NWI Wetland (USFWS)
- NFHL 100-Year Floodplain (FEMA)
- HUC 12 (USGS)
- SSURGO Soil Map Unit (NRCS)
- Hydric SSURGO Soil Map Unit (NRCS)

Soil Map Unit Description

BeA - Bennington silt loam, 0 to 2 percent slopes

BeB - Bennington silt loam, 2 to 6 percent slopes

Pe - Pewamo silty clay loam, low carbonate till, 0 to 2 percent slopes

3

0 100 200 400

Feet

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Vassell - Green Chapel North Project

FIGURE 2
SHEET 27 OF 29
SOIL MAP AND
NATIONAL WETLANDS INVENTORY MAP

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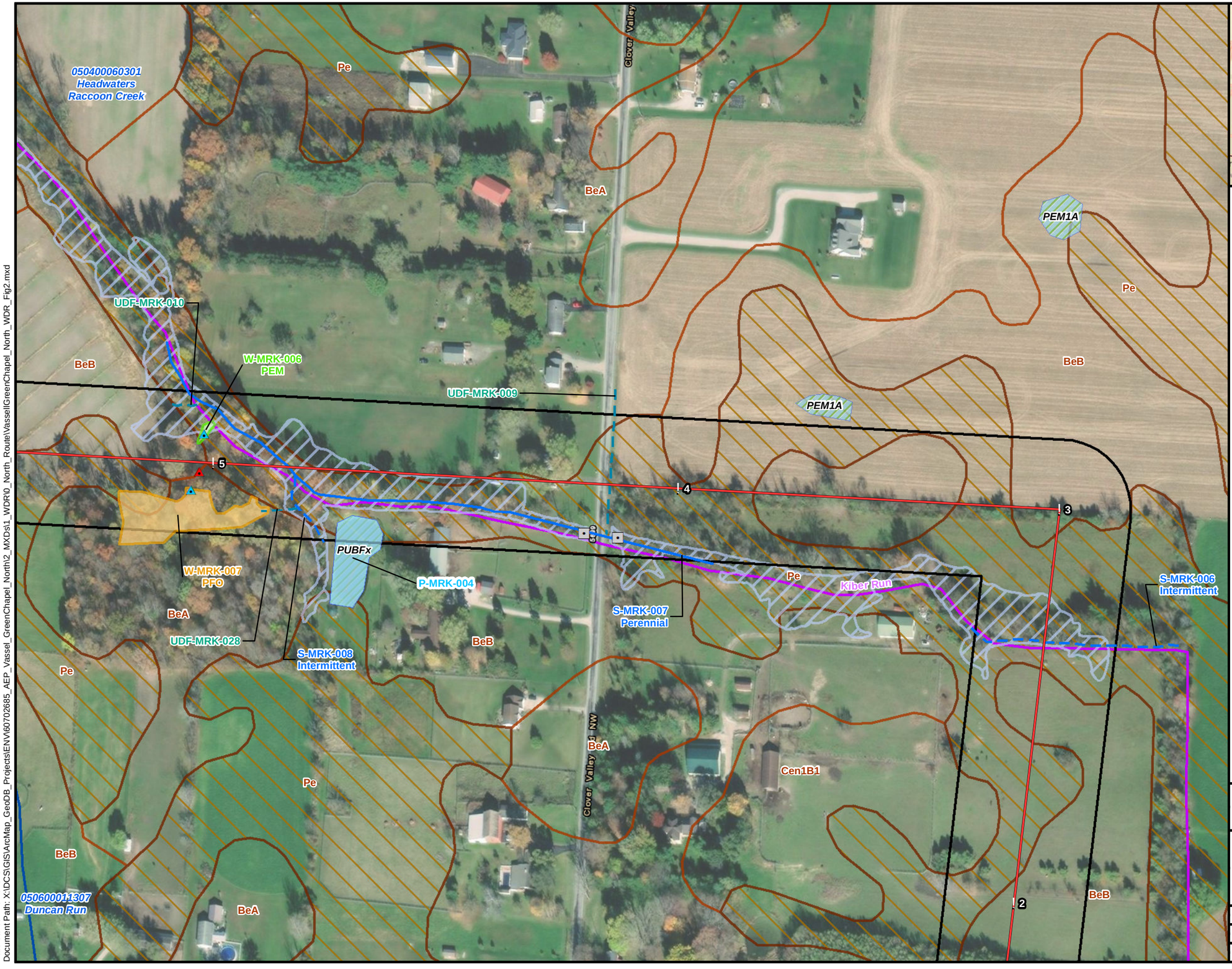

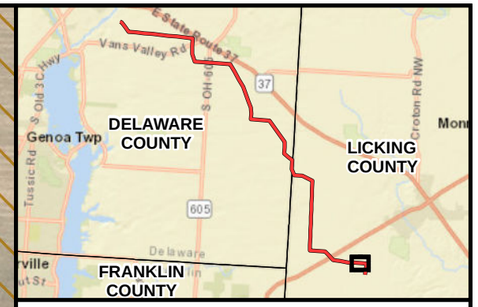

Legend

- Structure
- Wetland Data Point
- Upland Data Point
- Culvert
- Vassell - Green Chapel North Route
- Delineated Upland Drainage Feature
- Delineated Intermittent Stream
- Delineated Perennial Stream
- NHD Stream (USGS)
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond
- Project Survey Area
- NWI Wetland (USFWS)
- NFHL 100-Year Floodplain (FEMA)
- HUC 12 (USGS)
- SSURGO Soil Map Unit (NRCS)
- Hydric SSURGO Soil Map Unit (NRCS)

Soil Map Unit Description

BeA - Bennington silt loam, 0 to 2 percent slopes

BeB - Bennington silt loam, 2 to 6 percent slopes

Cen1B1 - Centerburg silt loam, 2 to 6 percent slopes

Pe - Pewamo silty clay loam, low carbonate till, 0 to 2 percent slopes

3

0 100 200 400

Feet

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Vassell - Green Chapel North Project

FIGURE 2
SHEET 28 OF 29
SOIL MAP AND
NATIONAL WETLANDS INVENTORY MAP

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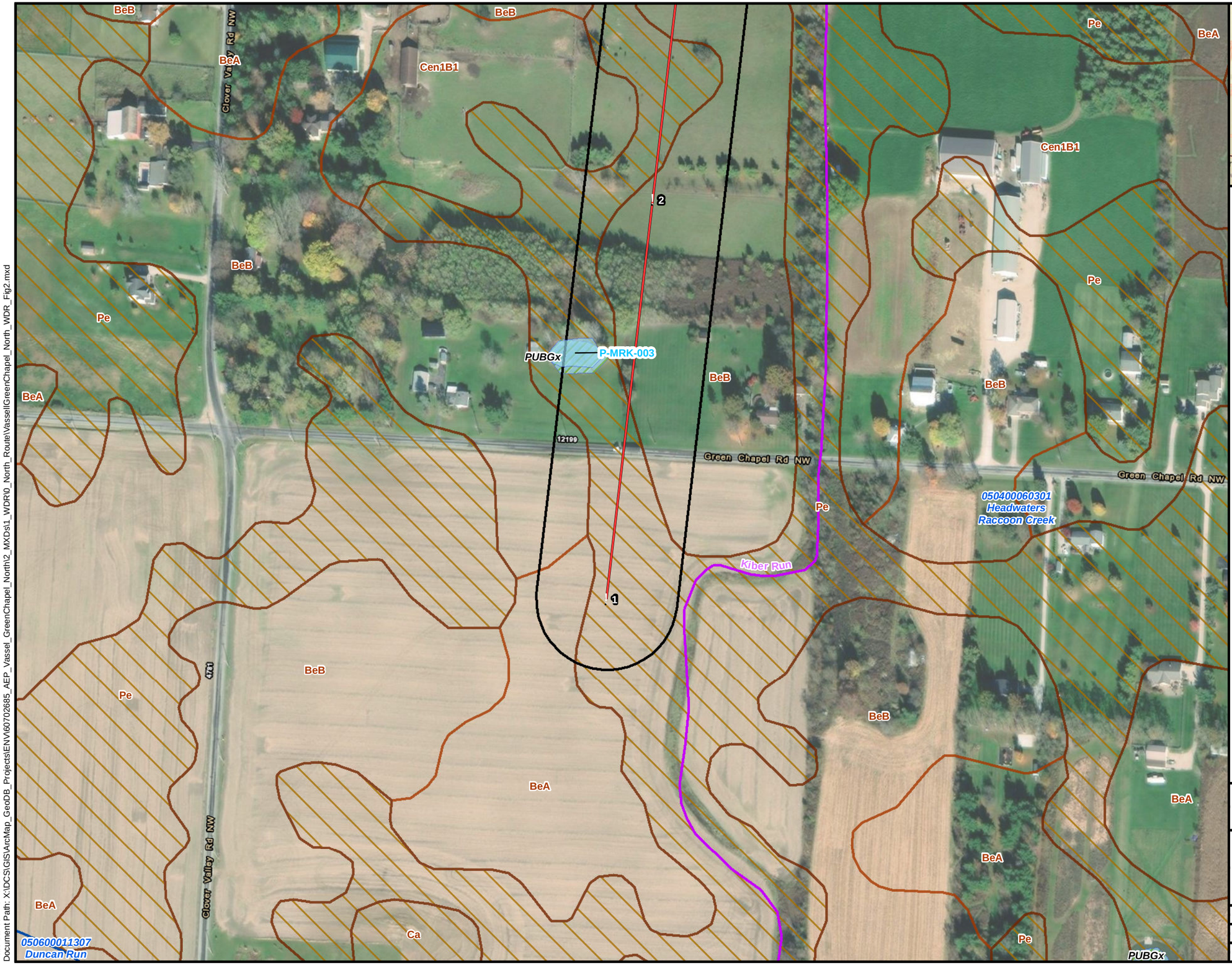

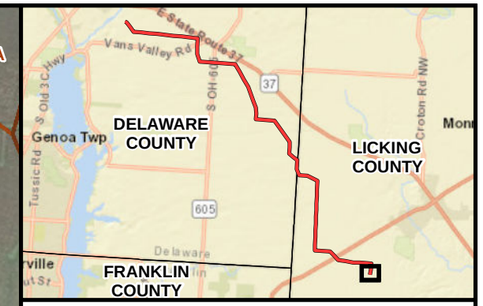

Legend

- Structure
- Vassell - Green Chapel North Route
- NHD Stream (USGS)
- Delineated Pond
- Project Survey Area
- NWI Wetland (USFWS)
- HUC 12 (USGS)
- SSURGO Soil Map Unit (NRCS)
- Hydric SSURGO Soil Map Unit (NRCS)

Soil Map Unit Description

BeA - Bennington silt loam, 0 to 2 percent slopes

BeB - Bennington silt loam, 2 to 6 percent slopes

Cen1B1 - Centerburg silt loam, 2 to 6 percent slopes

Pe - Pewamo silty clay loam, low carbonate till, 0 to 2 percent slopes

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 2
SHEET 29 OF 29
SOIL MAP AND
NATIONAL WETLANDS INVENTORY MAP

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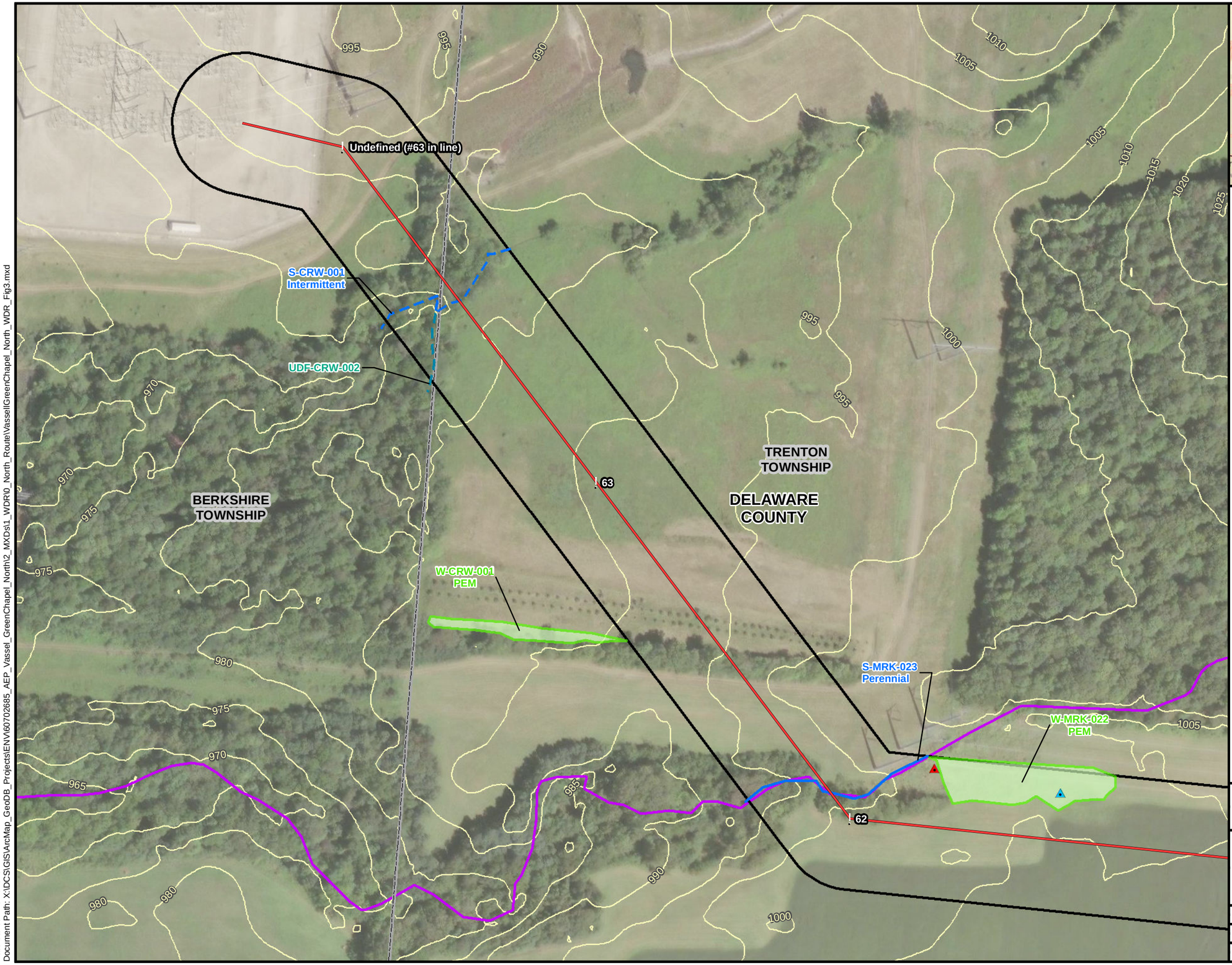

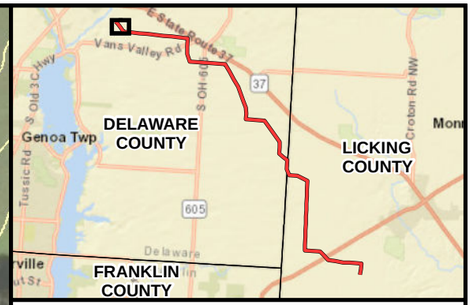

Legend

- Structure
- Wetland Data Point
- Upland Data Point
- Project Survey Area
- Vassell - Green Chapel North Route
- Delineated Upland Drainage Feature
- Delineated Intermittent Stream
- Delineated Perennial Stream
- NHD Stream (USGS)
- Contour (5-Ft)
- Delineated PEM Wetland

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 3
SHEET 1 OF 29
WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

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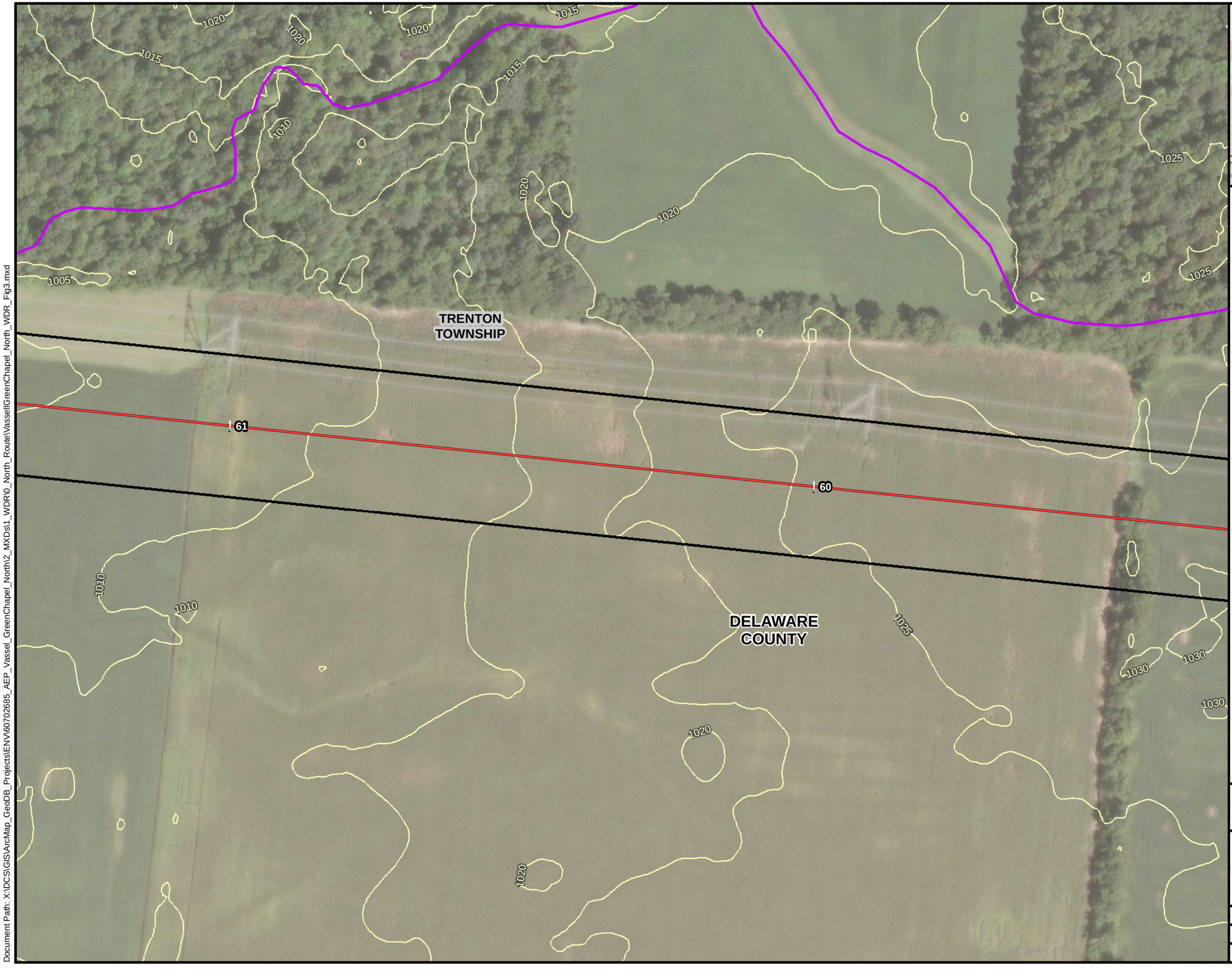

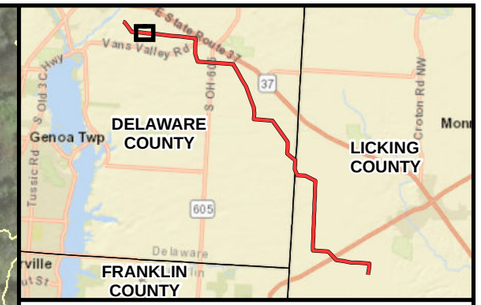

Legend

- Structure
- Project Survey Area
- Vassell - Green Chapel North Route
- NHD Stream (USGS)
- Contour (5-Ft)

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 3
SHEET 2 OF 29
WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

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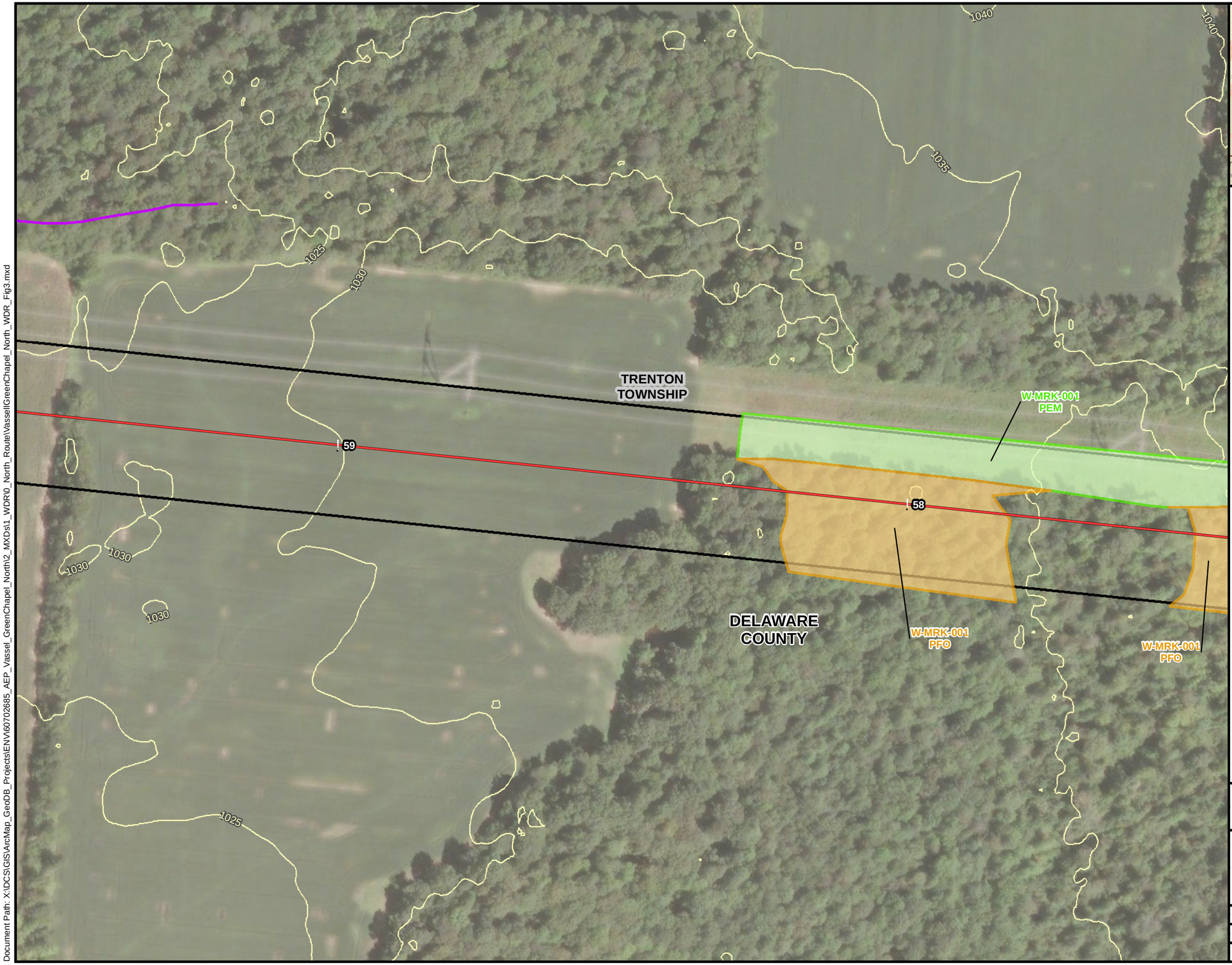

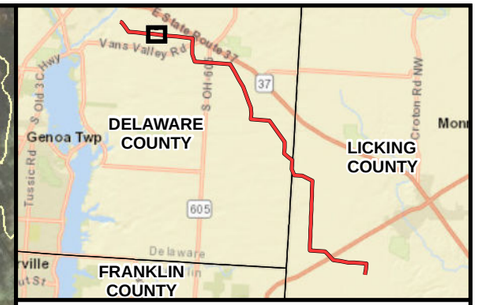

Legend

- Structure
- Project Survey Area
- Vassell - Green Chapel North Route
- NHD Stream (USGS)
- Contour (5-Ft)
- Delineated PEM Wetland
- Delineated PFO Wetland

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 3
SHEET 3 OF 29
WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
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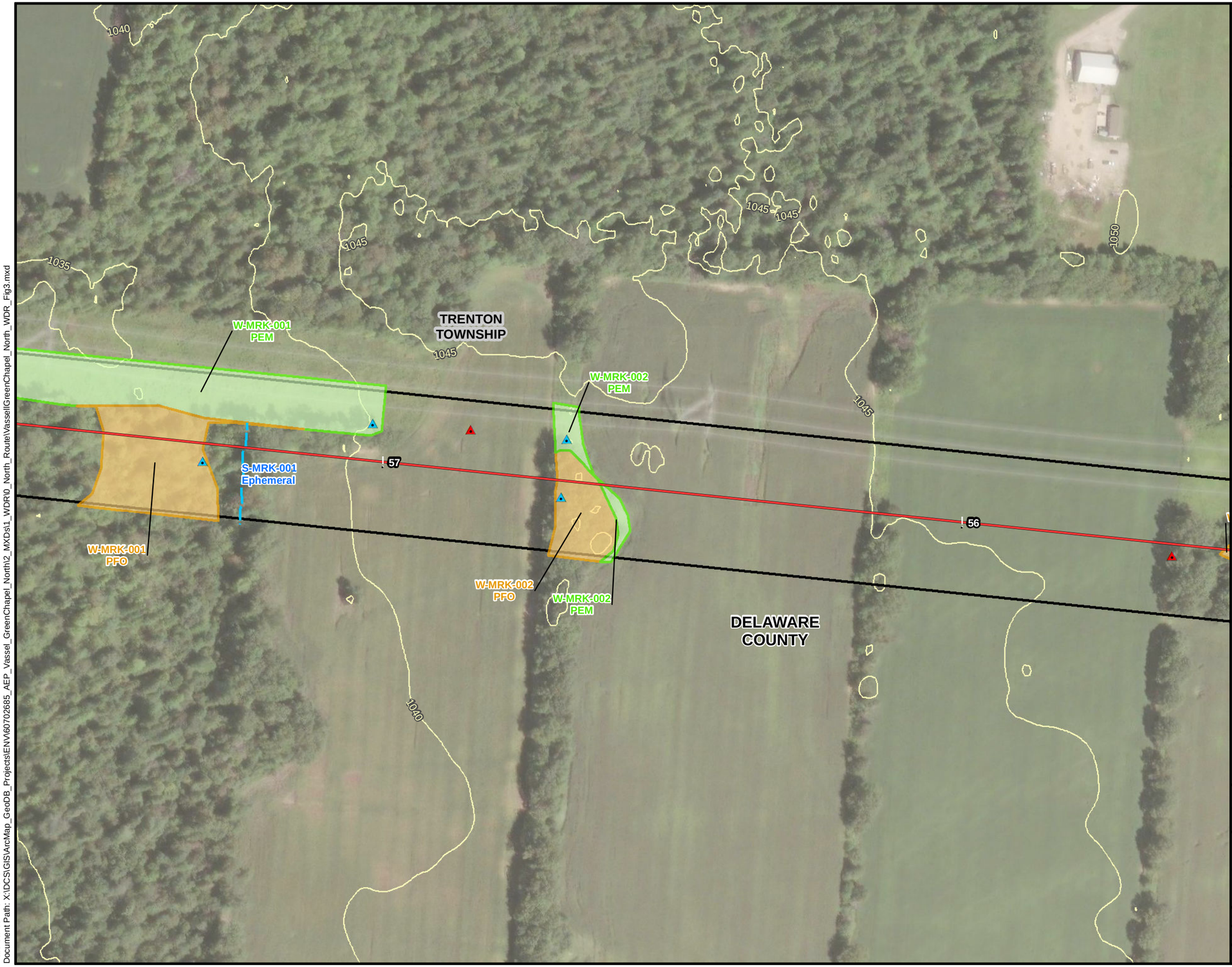

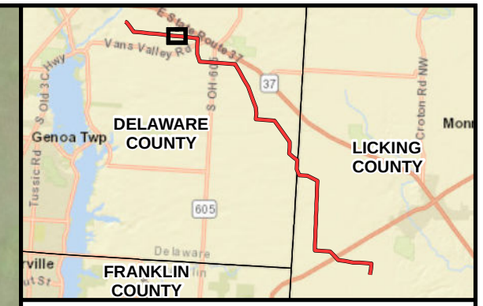

Legend

- Structure
- Wetland Data Point
- Upland Data Point
- Project Survey Area
- Vassell - Green Chapel North Route
- Delineated Ephemeral Stream
- Contour (5-Ft)
- Delineated PEM Wetland
- Delineated PFO Wetland

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 3
SHEET 4 OF 29
WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
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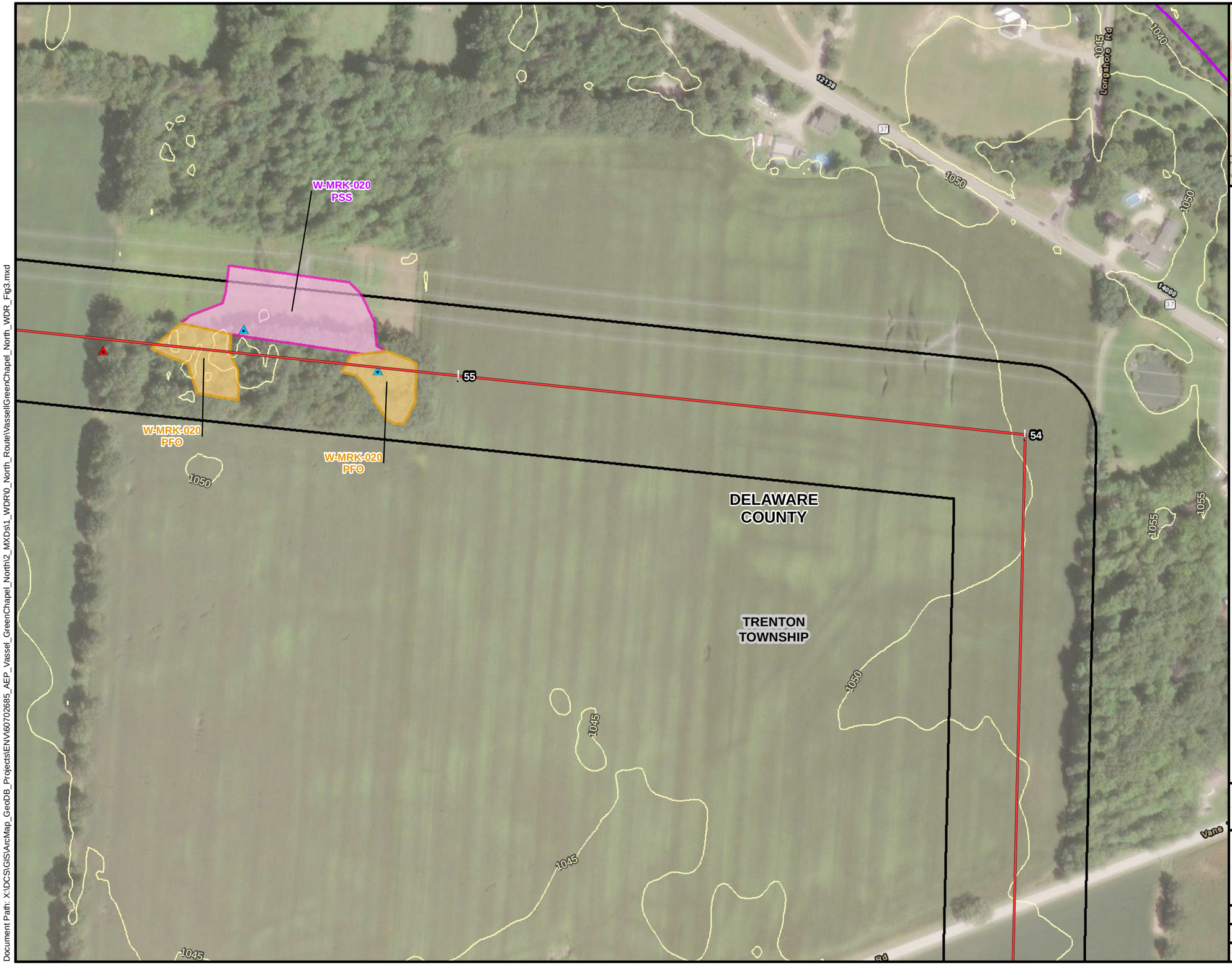

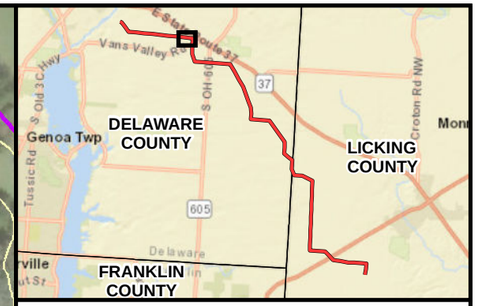

Legend

- Structure
- Wetland Data Point
- Upland Data Point
- Project Survey Area
- Vassell - Green Chapel North Route
- NHD Stream (USGS)
- Contour (5-Ft)
- Delineated PFO Wetland
- Delineated PSS Wetland

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 3
SHEET 5 OF 29
WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

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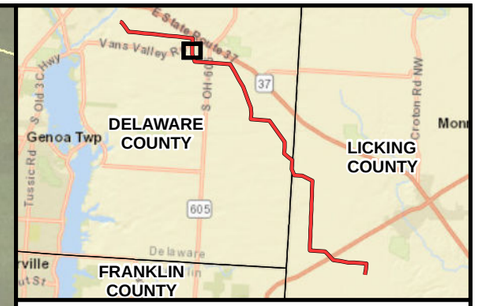


Legend

- Structure
- Wetland Data Point
- Upland Data Point
- Project Survey Area
- Vassell - Green Chapel North Route
- NHD Stream (USGS)
- Contour (5-Ft)
- Delineated PFO Wetland

3

0 100 200 400

Feet

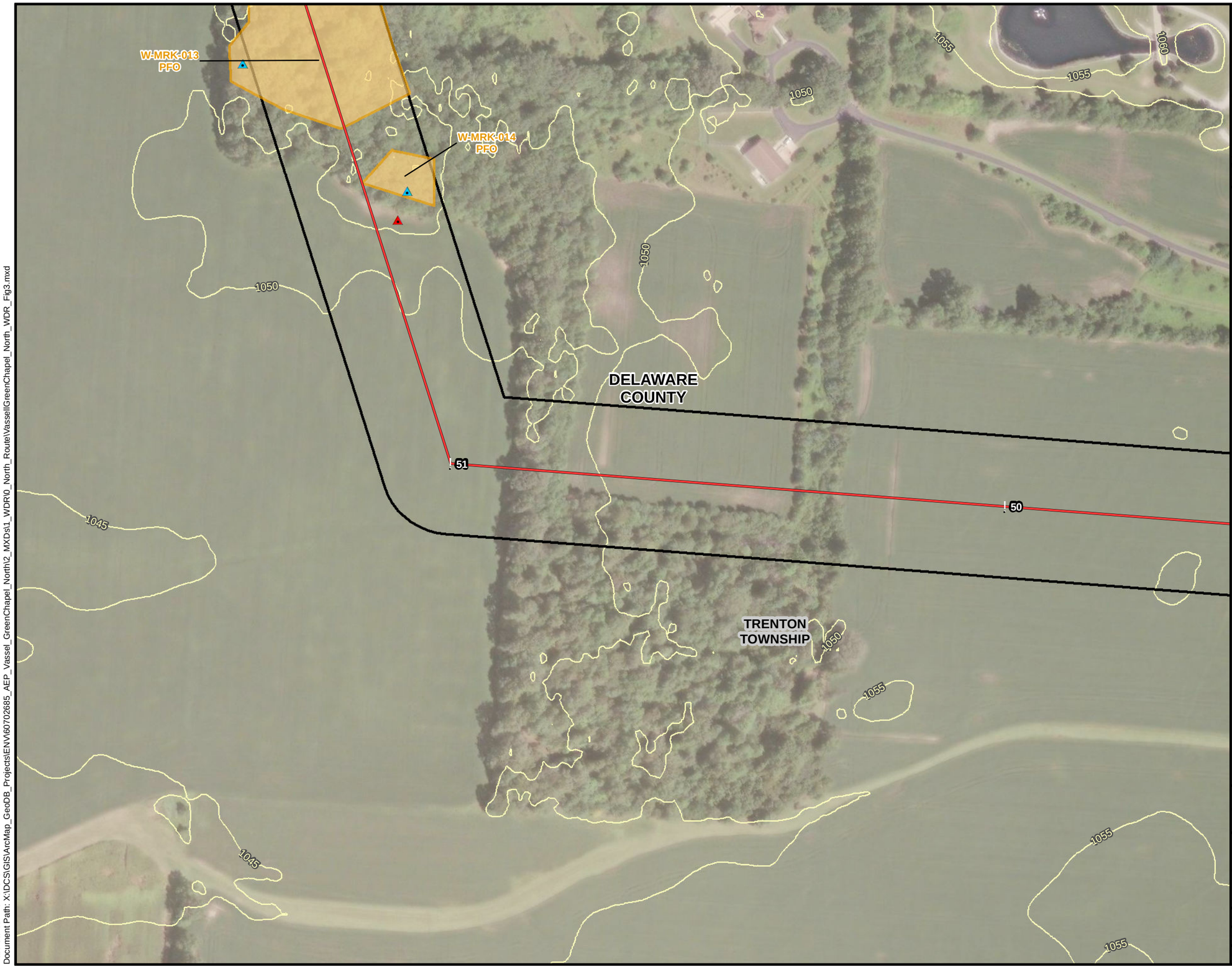
AEP OHIO TRANSMISSION COMPANY

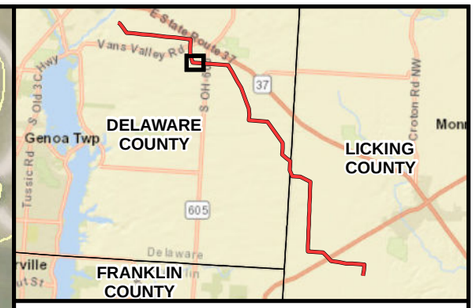
Vassell - Green Chapel North Project

FIGURE 3
SHEET 6 OF 29
WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
Document Path: X:\DCS\GIS\ArcMap_GeoDB_Projects\ENV\60702685_AEP_Vassel_GreenChapel_North\2_MXDs\1_WDR\0_North_Route\VassellGreenChapel_North_WDR_Fig3.mxd





Legend

- Structure
- Wetland Data Point
- Upland Data Point
- Project Survey Area
- Vassell - Green Chapel North Route
- Contour (5-Ft)
- Delineated PFO Wetland

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 3
SHEET 7 OF 29
WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
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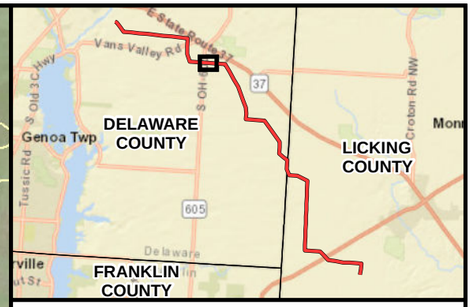
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
Document Path: X:\DCS\GIS\ArcMap_GeoDB_Projects\ENV\60702685_AEP_Vassel_GreenChapel_North\2_MXDs\1_WDR\0_North_Route\VassellGreenChapel_North_WDR_Fig3.mxd





Legend

- Structure
- Project Survey Area
- Vassell - Green Chapel North Route
- Contour (5-Ft)

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 3
SHEET 8 OF 29
WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
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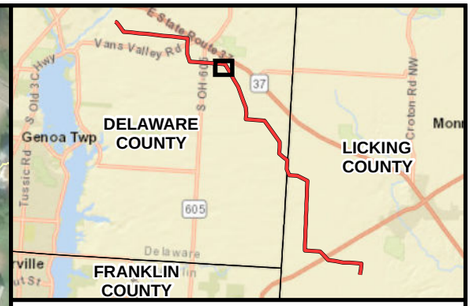
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
Document Path: X:\DCS\GIS\ArcMap_GeoDB_Projects\ENV\60702685_AEP_Vassel_GreenChapel_North\2_MXDs\1_WDR\0_North_Route\VassellGreenChapel_North_WDR_Fig3.mxd





Legend

- Structure
- Upland Data Point
- Project Survey Area
- Vassell - Green Chapel North Route
- NHD Stream (USGS)
- Contour (5-Ft)

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

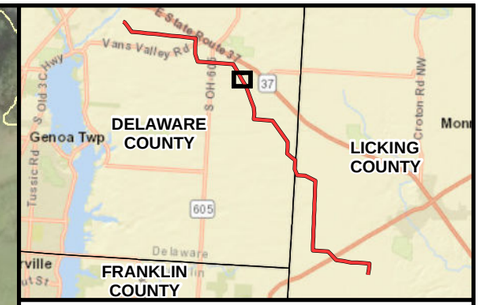
Vassell - Green Chapel North Project

FIGURE 3
SHEET 9 OF 29
WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
Document Path: X:\DCS\GIS\ArcMap_GeoDB_Projects\ENV\60702685_AEP_Vassel_GreenChapel_North\2_MXDs\1_WDR\0_North_Route\VassellGreenChapel_North_WDR_Fig3.mxd





Legend

- Structure
- Project Survey Area
- Culvert
- Vassell - Green Chapel North Route
- Delineated Upland Drainage Feature
- Delineated Intermittent Stream
- NHD Stream (USGS)
- Contour (5-Ft)

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 3
SHEET 10 OF 29
WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
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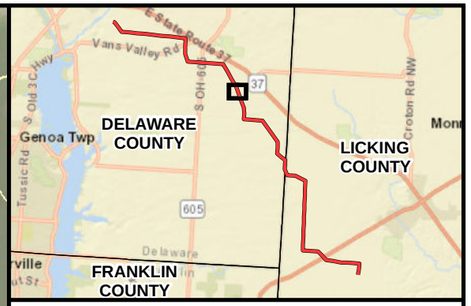


Legend

- Structure
- Upland Data Point
- Project Survey Area
- Vassell - Green Chapel North Route
- NHD Stream (USGS)
- Contour (5-Ft)

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

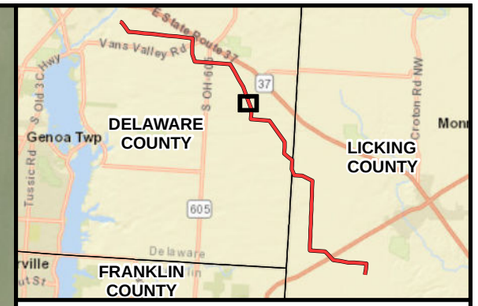
Vassell - Green Chapel North Project

FIGURE 3
SHEET 11 OF 29
WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
Document Path: X:\DC\GIS\ArcMap_GeoDB_Projects\ENV\60702685_AEP_Vassel_GreenChapel_North\2_MXDs\1_WDR\0_North_Route\VassellGreenChapel_North_WDR_Fig3.mxd





Legend

- Structure
- Wetland Data Point
- Upland Data Point
- Project Survey Area
- Culvert
- Vassell - Green Chapel North Route
- Delineated Upland Drainage Feature
- Contour (5-Ft)
- Delineated PFO Wetland

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 3
SHEET 12 OF 29
WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
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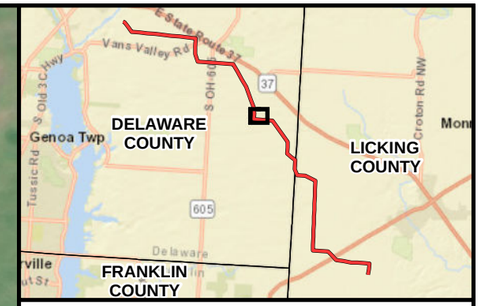

Legend

- Structure
- Wetland Data Point
- Upland Data Point
- Project Survey Area
- Culvert
- Vassell - Green Chapel North Route
- Delineated Upland Drainage Feature
- Contour (5-Ft)
- Delineated PEM Wetland

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 3
SHEET 13 OF 29
WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
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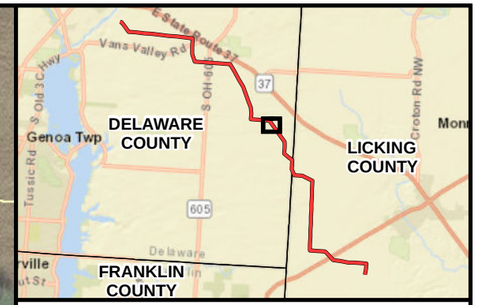

Legend

- Structure
- Project Survey Area
- Vassell - Green Chapel North Route
- Contour (5-Ft)

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 3
SHEET 14 OF 29
WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
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JOB NO.: 60702685	AECOM

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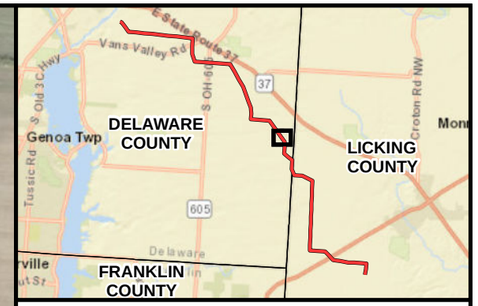

Legend

- Structure
- Area Not Surveyed due to Landowner Permissions
- Project Survey Area
- Vassell - Green Chapel North Route
- Contour (5-Ft)

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 3
SHEET 15 OF 29
WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

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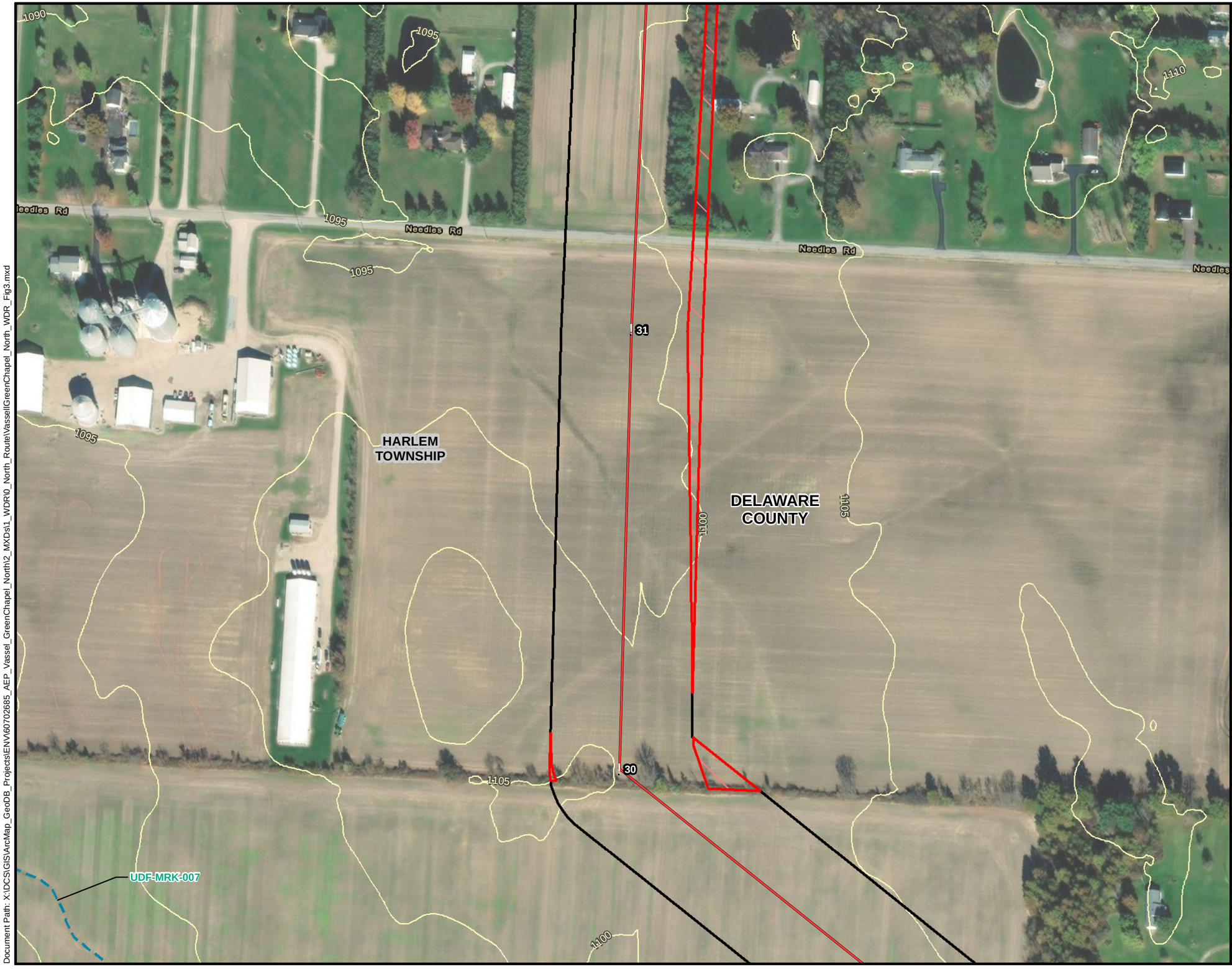

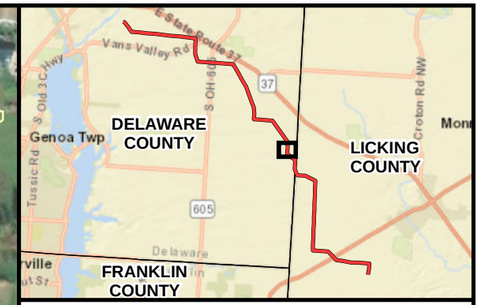

Legend

- Structure
- Area Not Surveyed due to Landowner Permissions
- Project Survey Area
- Vassell - Green Chapel North Route
- Delineated Upland Drainage Feature
- Contour (5-Ft)

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 3
SHEET 16 OF 29
WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
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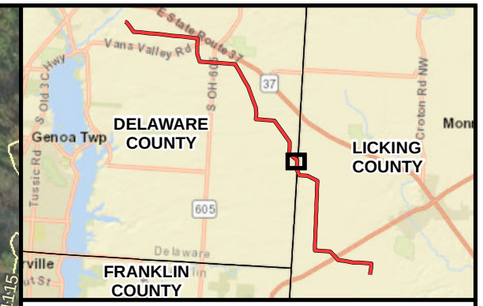

Legend

- Structure
- Upland Data Point
- Project Survey Area
- Culvert
- Vassell - Green Chapel North Route
- Delineated Upland Drainage Feature
- Contour (5-Ft)

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 3
SHEET 17 OF 29
WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
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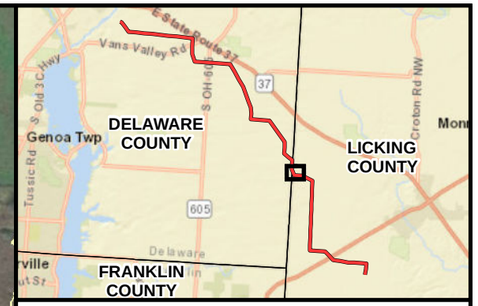

Legend

- Structure
- Area Not Surveyed due to Landowner Permissions
- Project Survey Area
- Culvert
- Vassell - Green Chapel North Route
- Delineated Upland Drainage Feature
- Contour (5-Ft)

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 3
SHEET 18 OF 29
WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
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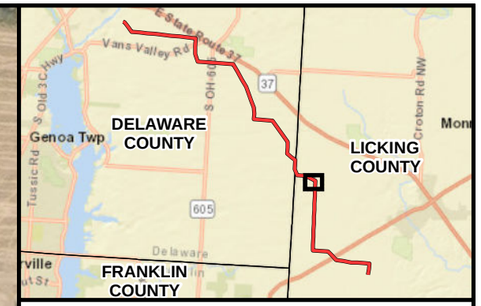

Legend

- Structure
- Wetland Data Point
- Upland Data Point
- Area Not Surveyed due to Landowner Permissions
- Project Survey Area
- Vassell - Green Chapel North Route
- Contour (5-Ft)
- Delineated PEM Wetland
- Delineated PFO Wetland

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 3
SHEET 19 OF 29
WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
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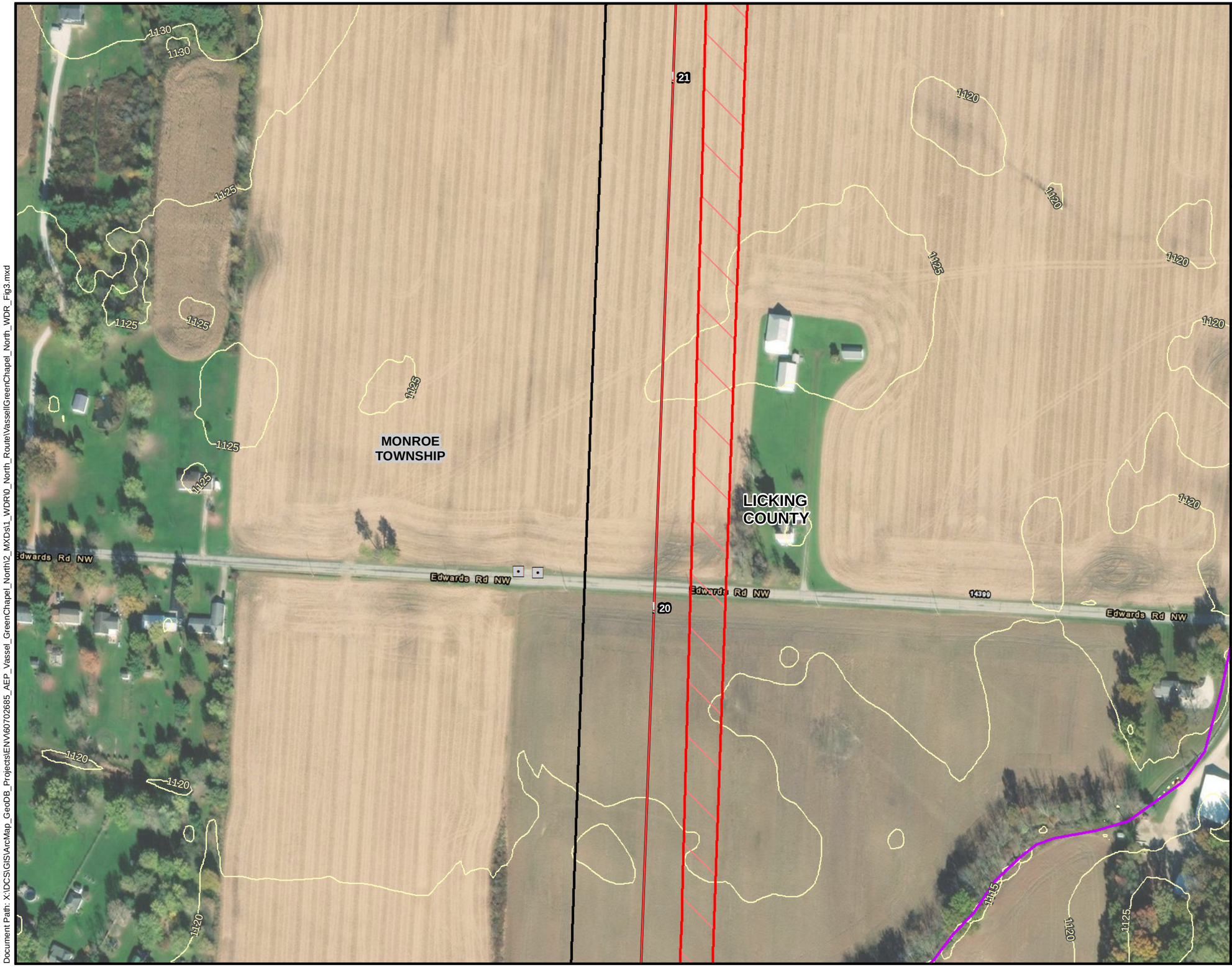

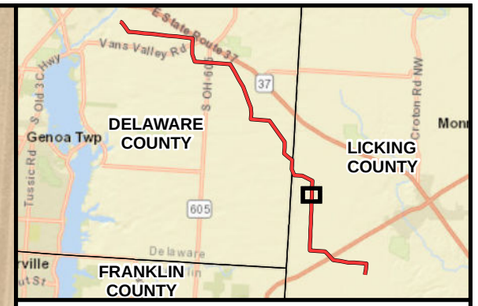

Legend

- Structure
- Area Not Surveyed due to Landowner Permissions
- Project Survey Area
- Culvert
- Vassell - Green Chapel North Route
- NHD Stream (USGS)
- Contour (5-Ft)

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 3
SHEET 20 OF 29
WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
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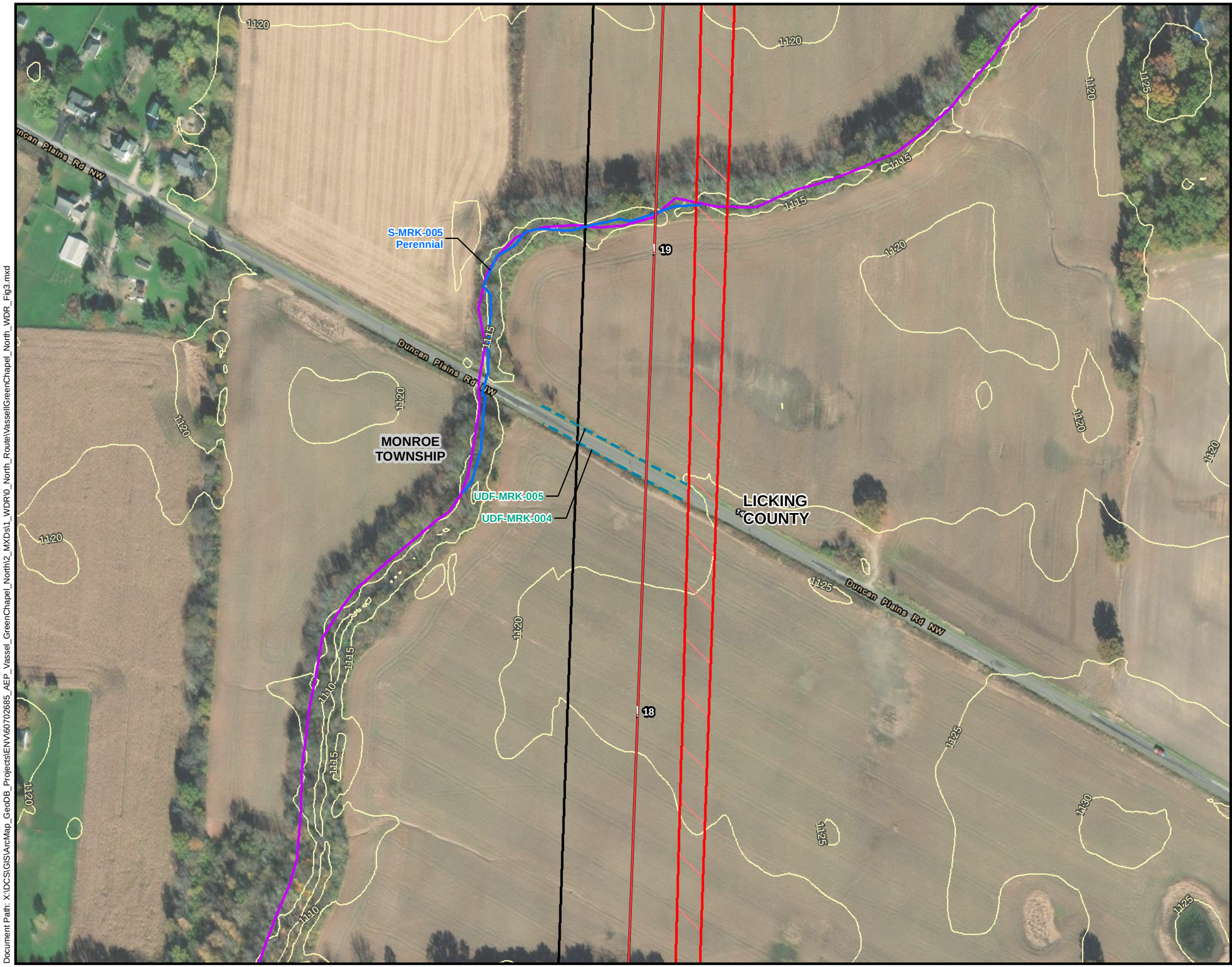

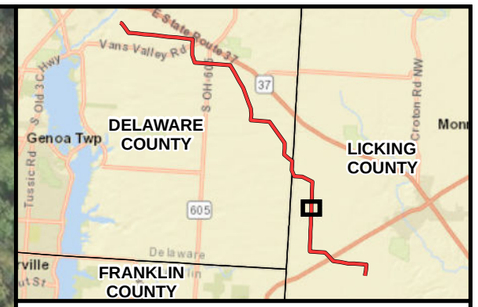

Legend

- Structure
- Area Not Surveyed due to Landowner Permissions
- Project Survey Area
- Vassell - Green Chapel North Route
- Delineated Upland Drainage Feature
- Delineated Perennial Stream
- NHD Stream (USGS)
- Contour (5-Ft)

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 3
SHEET 21 OF 29
WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

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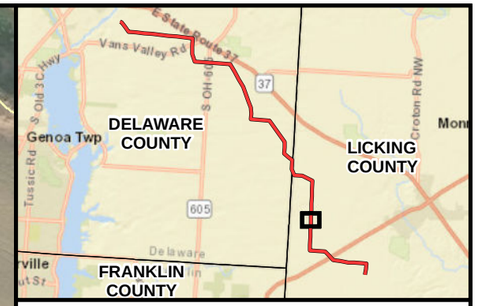

Legend

- Structure
- Wetland Data Point
- Upland Data Point
- Area Not Surveyed due to Landowner Permissions
- Project Survey Area
- Vassell - Green Chapel North Route
- NHD Stream (USGS)
- Contour (5-Ft)
- Delineated PFO Wetland

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 3
SHEET 22 OF 29
WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
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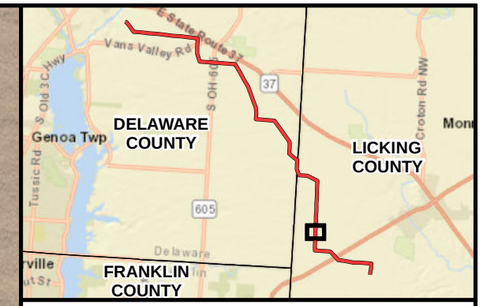

Legend

- Structure
- Wetland Data Point
- Upland Data Point
- Area Not Surveyed due to Landowner Permissions
- Project Survey Area
- Vassell - Green Chapel North Route
- NHD Stream (USGS)
- Contour (5-Ft)
- Delineated PFO Wetland

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 3
SHEET 23 OF 29
WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
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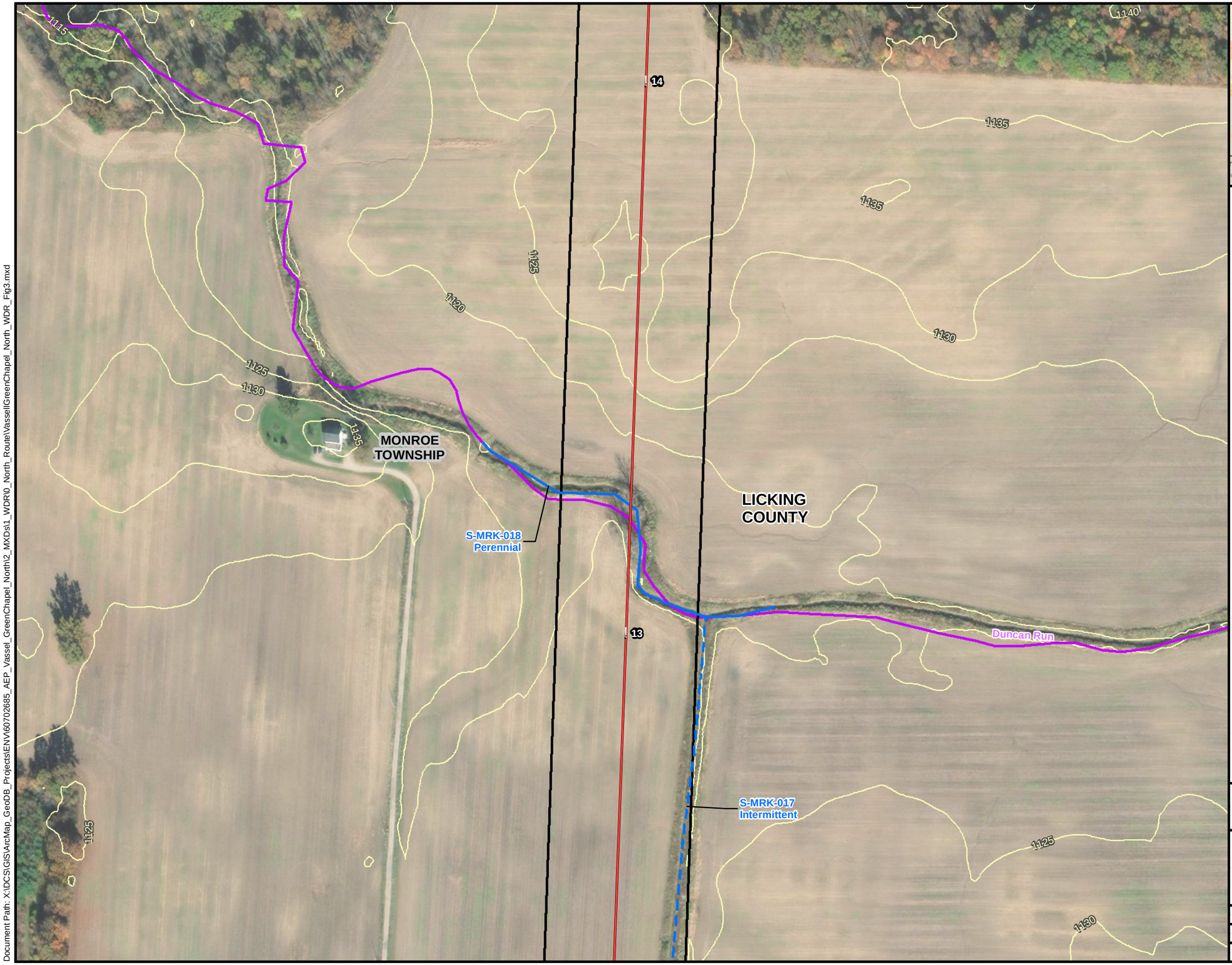

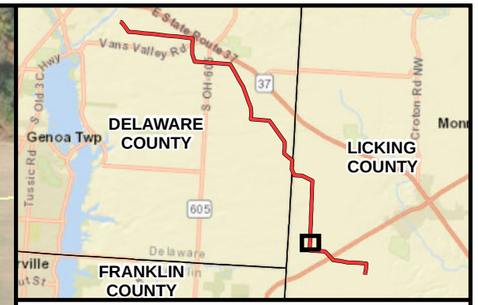

Legend

- Structure
- Project Survey Area
- Vassell - Green Chapel North Route
- Delineated Intermittent Stream
- Delineated Perennial Stream
- NHD Stream (USGS)
- Contour (5-Ft)

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 3
SHEET 24 OF 29
WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
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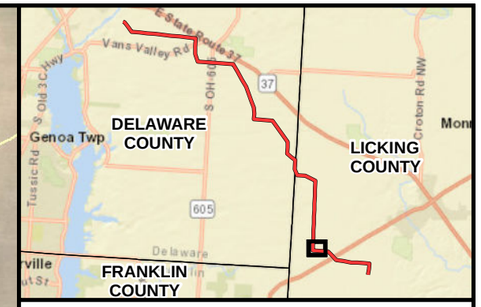
Date Saved: 12/14/2023
Document Path: X:\DCS\GIS\ArcMap_GeoDB_Projects\ENV\60702685_AEP_Vassel_GreenChapel_North\2_MXDs\1_WDR\0_North_Route\VassellGreenChapel_North_WDR_Fig3.mxd





Legend

- Structure
- Wetland Data Point
- Upland Data Point
- Area Not Surveyed due to Landowner Permissions
- Project Survey Area
- Vassell - Green Chapel North Route
- Delineated Intermittent Stream
- Delineated Perennial Stream
- NHD Stream (USGS)
- Contour (5-Ft)
- Delineated PEM Wetland
- Delineated PFO Wetland

3

0 100 200 400

Feet

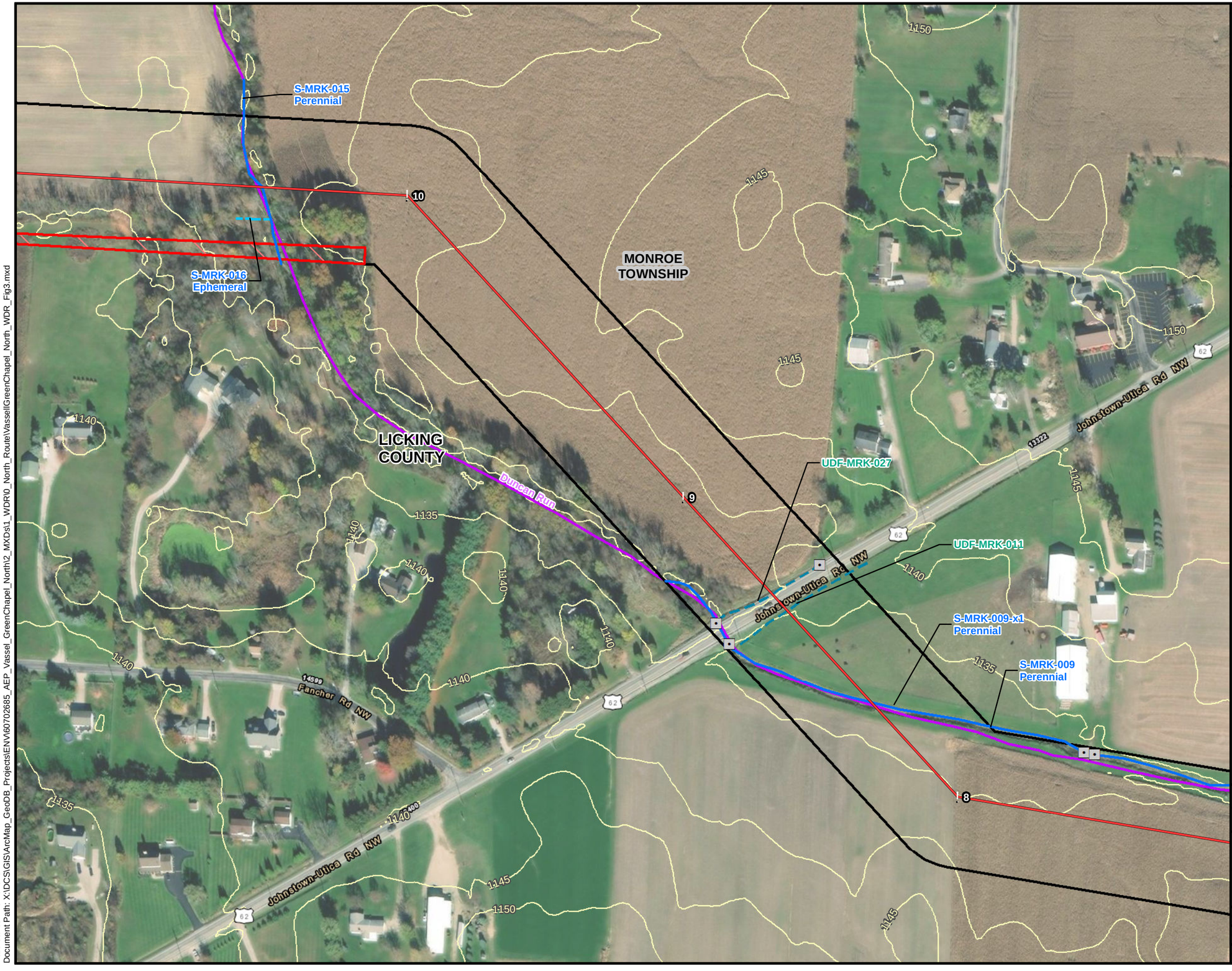
AEP OHIO TRANSMISSION COMPANY

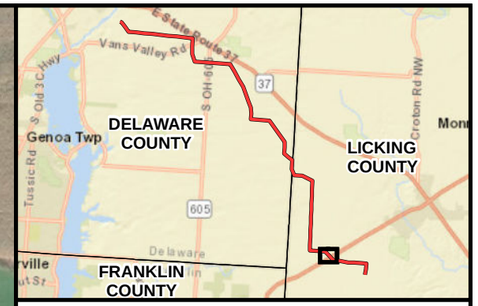
Vassell - Green Chapel North Project

FIGURE 3
SHEET 25 OF 29
WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
Document Path: X:\DCS\GIS\ArcMap_GeoDB_Projects\ENV\60702685_AEP_Vassel_GreenChapel_North\2_MXDs\1_WDR\0_North_Route\VassellGreenChapel_North_WDR_Fig3.mxd





Legend

- Structure
- Area Not Surveyed due to Landowner Permissions
- Project Survey Area
- Culvert
- Vassell - Green Chapel North Route
- Delineated Upland Drainage Feature
- Delineated Ephemeral Stream
- Delineated Perennial Stream
- NHD Stream (USGS)
- Contour (5-Ft)

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 3
SHEET 26 OF 29
WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
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JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
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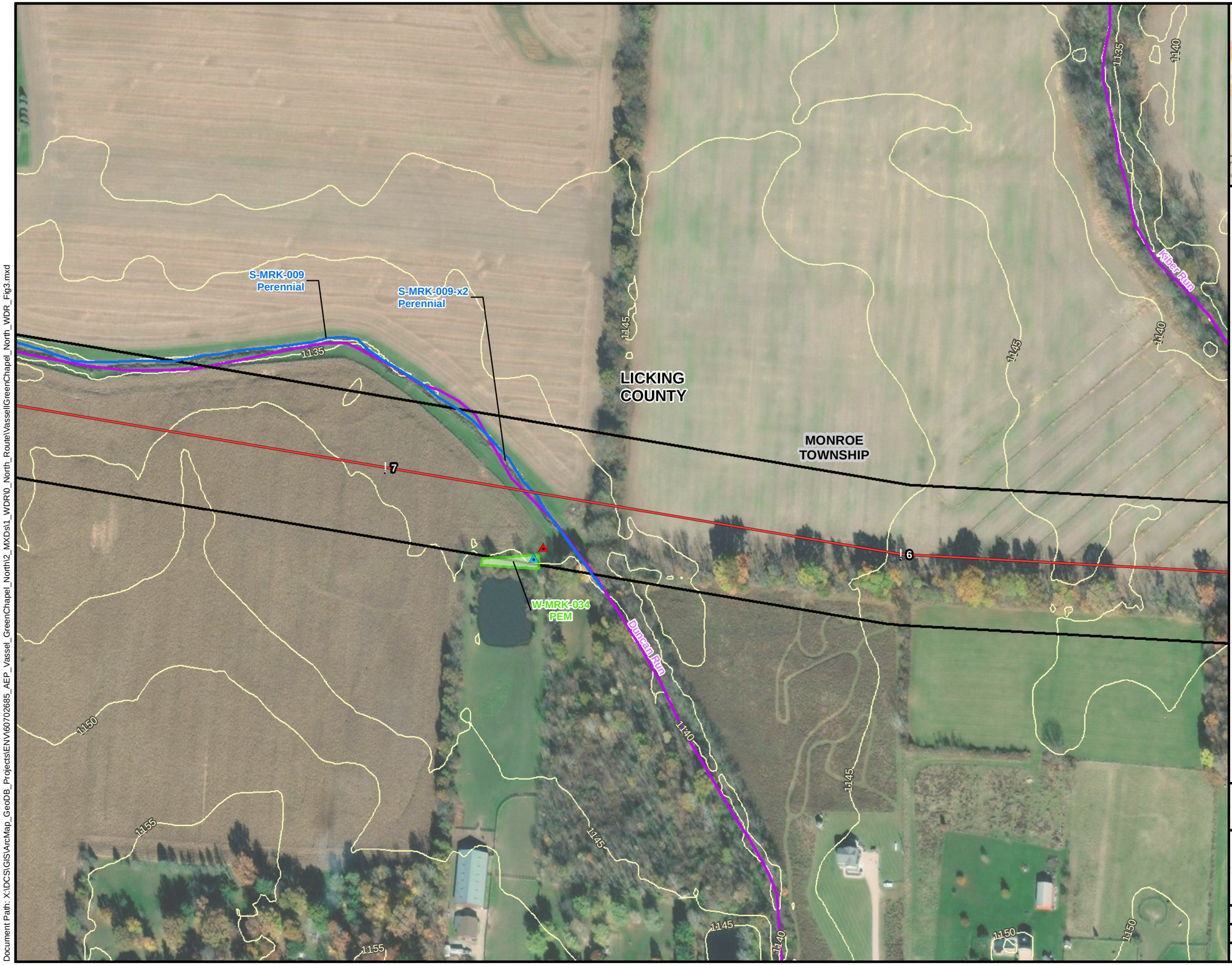

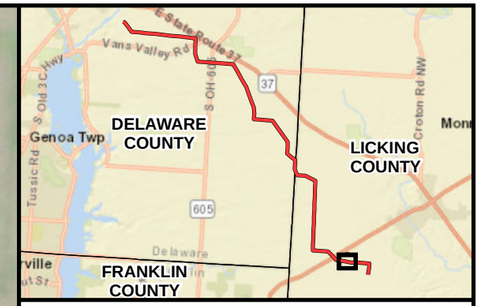

Legend

- Structure
- Wetland Data Point
- Upland Data Point
- Project Survey Area
- Vassell - Green Chapel North Route
- Delineated Perennial Stream
- NHD Stream (USGS)
- Contour (5-Ft)
- Delineated PEM Wetland

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 3
SHEET 27 OF 29
WETLAND DELINEATION AND
STREAM ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
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Date Saved: 12/14/2023
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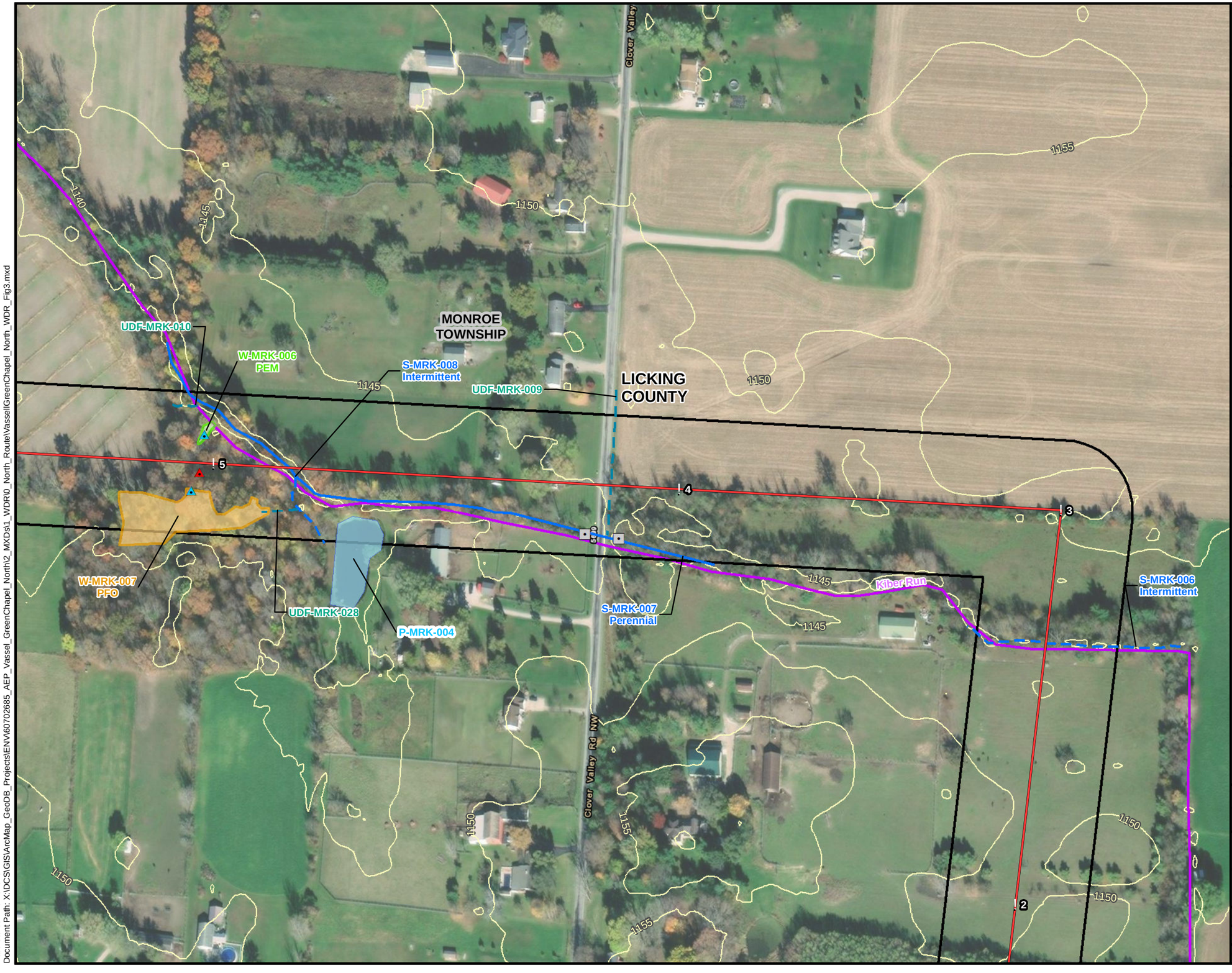

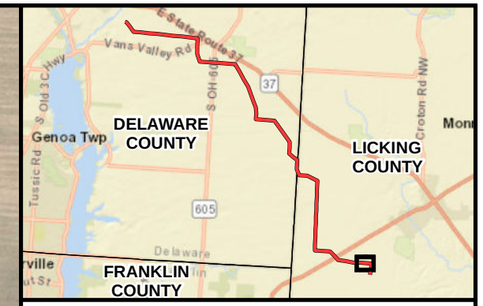

Legend

- Structure
- Wetland Data Point
- Upland Data Point
- Project Survey Area
- Culvert
- Vassell - Green Chapel North Route
- Delineated Upland Drainage Feature
- Delineated Intermittent Stream
- Delineated Perennial Stream
- NHD Stream (USGS)
- Contour (5-Ft)
- Delineated PEM Wetland
- Delineated PFO Wetland
- Delineated Pond

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 3
SHEET 28 OF 29
WETLAND DELINEATION AND STREAM ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
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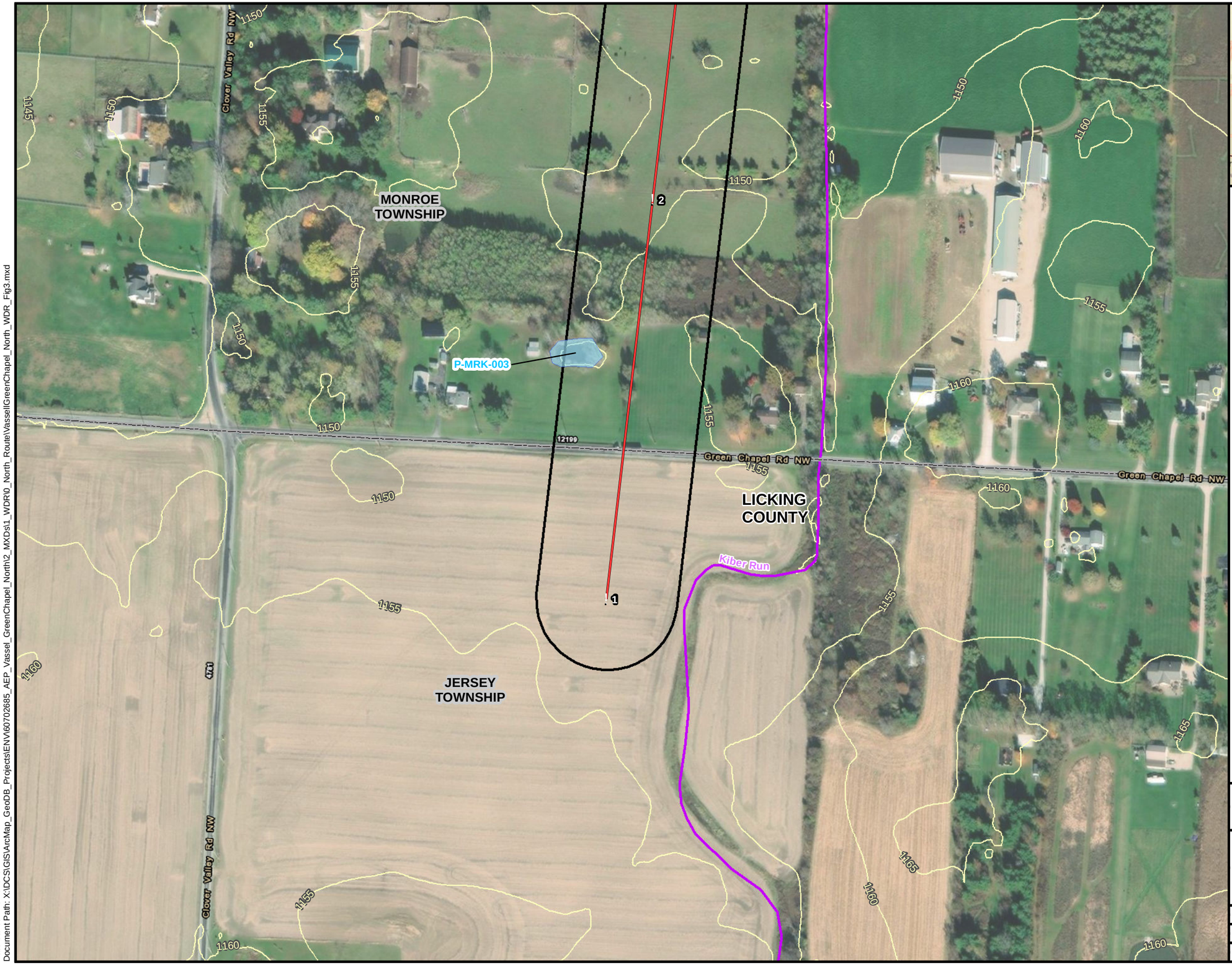
Case No. 24-0014-EL-BLN

Part 5 of 9



Legend

- Structure
- Project Survey Area
- Vassell - Green Chapel North Route
- NHD Stream (USGS)
- Contour (5-Ft)
- Delineated Pond

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 3
SHEET 29 OF 29
WETLAND DELINEATION AND STREAM ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
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OEPA EPA 401 Eligible Little Walnut Creek 050600011305

Prairie Run

OEPA EPA 401 Eligible Perfect Creek-Big Walnut Creek 050600011304

OEPA EPA 401 Eligible Perfect Creek-Big Walnut Creek 050600011304

North Fork Rattlesnake Creek

North Fork Rattlesnake Creek

North Fork Rattlesnake Creek

OEPA EPA 401 Eligible Otter Fork Licking River 050400060101

Little Walnut Creek

Vassell Station
40.22837
-82.852709

Rattlesnake Creek

Otter Fork Licking River

East Fork Rattlesnake Creek

OEPA EPA 401 Eligible Rattlesnake Creek 050600011303

South Fork Rattlesnake Creek

OEPA EPA 401 Eligible Prairie Run-Big Walnut Creek 050600011306

Lobdell Creek

OEPA EPA 401 Eligible Hoover Reservoir-Big Walnut Creek 050600011308

OEPA EPA 401 Eligible Lobdell Creek 050400060302

Big Walnut Creek

Raccoon Creek

OEPA EPA 401 Eligible Bliss Run-Alum Creek 050600011602

OEPA EPA 401 Eligible Duncan Run 050600011307

OEPA EPA 401 Eligible Headwaters Raccoon Creek 050400060301

Duncan Run

Kiber Run

OEPA EPA 401 Possibly Eligible Rocky Fork Creek 050600011501

Rocky Fork Creek

Schleppi Run

Bevelheimer Ditch

OEPA EPA 401 Possibly Eligible Headwaters Blacklick Creek 050600011503

Proposed Station
40.121519
-82.719497

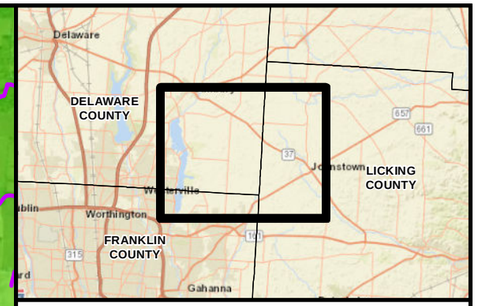
Sugar Run

Blacklick Creek

OEPA EPA 401 Possibly Eligible City of Gahanna-Big Walnut Creek 050600011502

Cornell Run

Cornell Run



Legend

- Station
- Vassell - Green Chapel North Route
- NHD Stream (USGS)
- Project Survey Area

OEPA Eligibility:

- Eligible
- Possibly Eligible

3

0 0.5 1 2

Miles

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 4
STREAM ELIGIBILTY MAP

DATE: 12/14/2023	1 INCH = 1 MILE
CREATED BY: NB	CHECKED BY: BG
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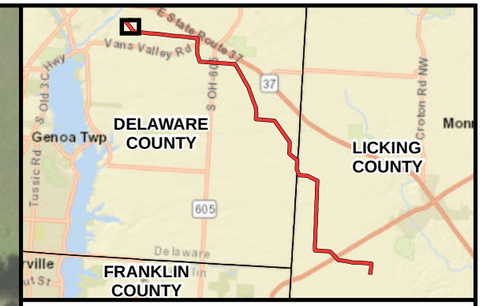
Vassell Station
PH-1
PH-2
PH-3
PH-4
PH-5



Legend

-) Station
- (Photo Location
- Project Survey Area

Vegetative Communities Type

- Agricultural Row-Crop
- Old Field
- Wetlands/Streams/Ponds
- Urban
- Woodland

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

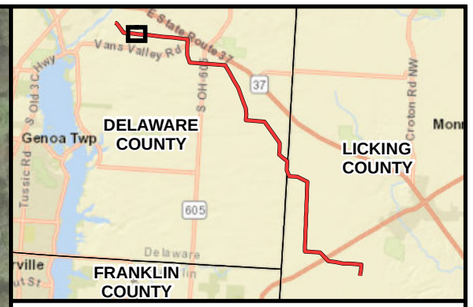
Vassell - Green Chapel North Project

FIGURE 5
SHEET 1 OF 29
VEGETATIVE COMMUNITIES ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
Document Path: X:\DCS\GIS\ArcMap_GeoDB_Projects\ENV\60702685_AEP_Vassel_GreenChapel_North\2_MXDs\1_WDR\0_North_Route\VassellGreenChapel_North_WDR_Fig5.mxd





Legend

(Photo Location

Project Survey Area

Vegetative Communities Type

Agricultural Row-Crop

Woodland

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 5
SHEET 2 OF 29
VEGETATIVE COMMUNITIES ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

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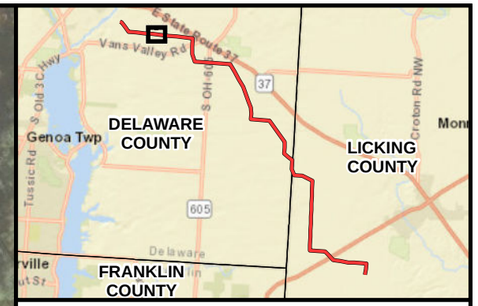

Legend

(Photo Location

Project Survey Area

Vegetative Communities Type

Agricultural Row-Crop

Wetlands/Streams/Ponds

Woodland

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 5
SHEET 3 OF 29
VEGETATIVE COMMUNITIES ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
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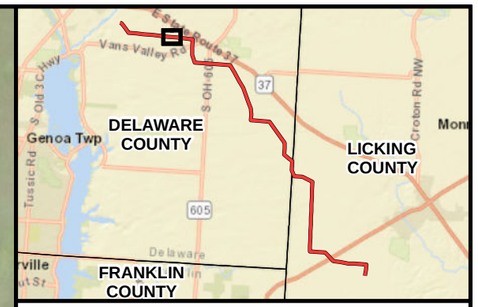

Legend

(Photo Location

Project Survey Area

Vegetative Communities Type

- Agricultural Row-Crop
- Old Field
- Wetlands/Streams/Ponds
- Woodland

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 5
SHEET 4 OF 29
VEGETATIVE COMMUNITIES ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

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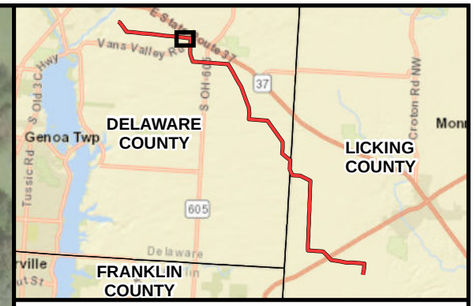

Legend

(Photo Location

Project Survey Area

Vegetative Communities Type

- Agricultural Row-Crop
- Old Field
- Wetlands/Streams/Ponds
- Urban
- Woodland

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 5
SHEET 5 OF 29
VEGETATIVE COMMUNITIES ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
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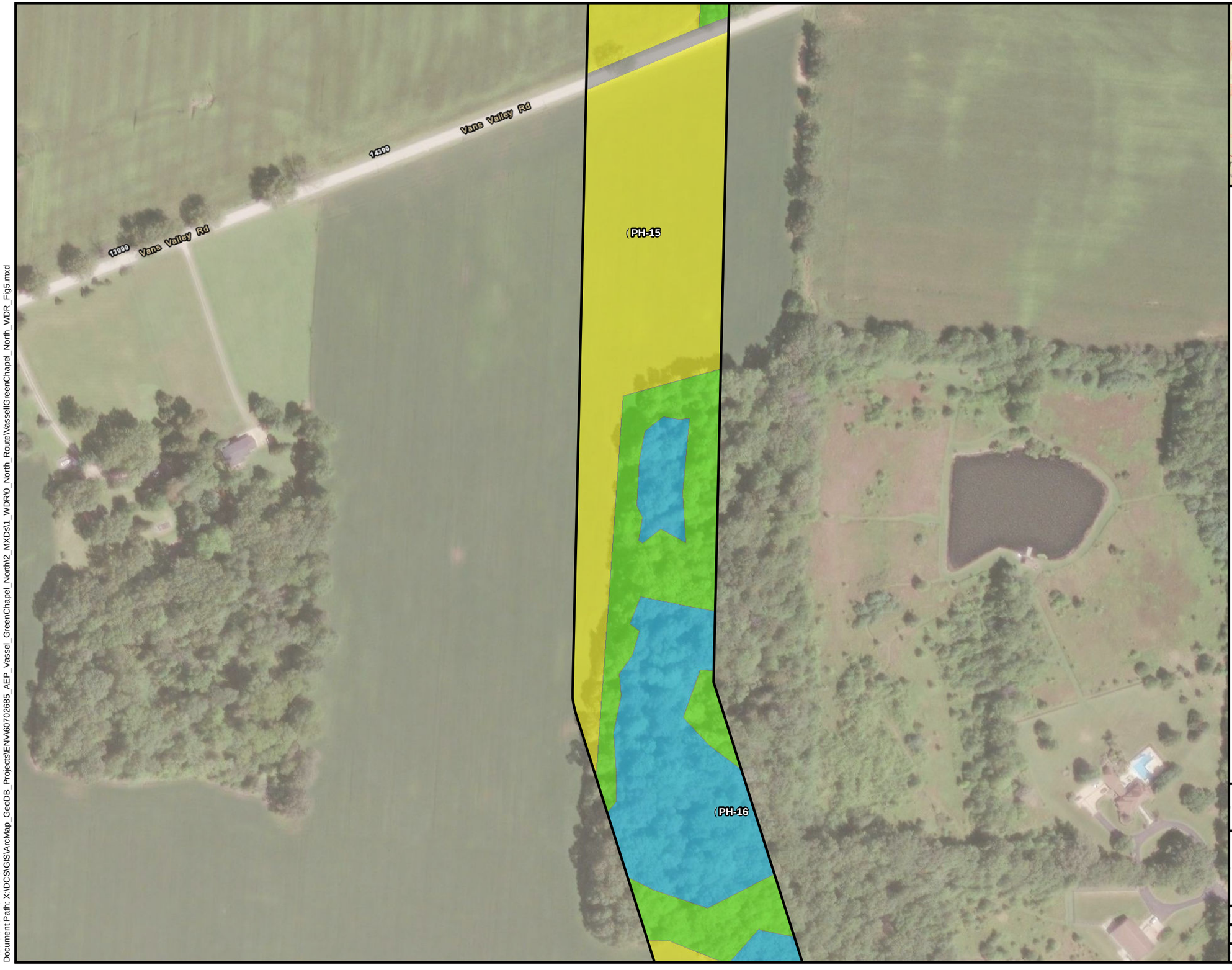



Legend

(Photo Location

Project Survey Area

Vegetative Communities Type

- Agricultural Row-Crop
- Wetlands/Streams/Ponds
- Urban
- Woodland

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 5
SHEET 6 OF 29
VEGETATIVE COMMUNITIES
ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
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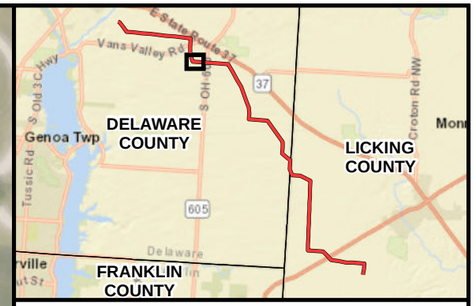

Legend

- Photo Location
- Project Survey Area

Vegetative Communities Type

- Agricultural Row-Crop
- Pasture/Hay Fields
- Wetlands/Streams/Ponds
- Woodland

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 5
SHEET 7 OF 29
VEGETATIVE COMMUNITIES ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
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Legend

Project Survey Area

Vegetative Communities Type

Agricultural Row-Crop

Urban

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 5
SHEET 8 OF 29
VEGETATIVE COMMUNITIES
ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
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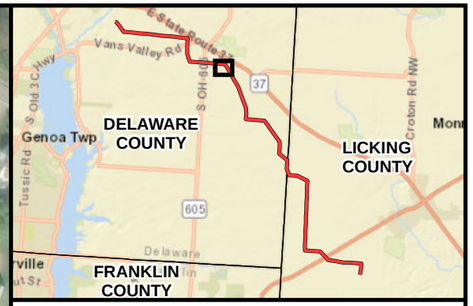

Legend

(Photo Location

Project Survey Area

Vegetative Communities Type

Agricultural Row-Crop

Woodland

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 5
SHEET 9 OF 29
VEGETATIVE COMMUNITIES
ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

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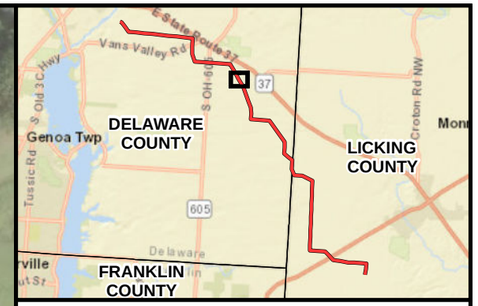

Legend

(Photo Location

Project Survey Area

Vegetative Communities Type

- Agricultural Row-Crop
- Wetlands/Streams/Ponds
- Urban
- Woodland

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 5
SHEET 10 OF 29
VEGETATIVE COMMUNITIES ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

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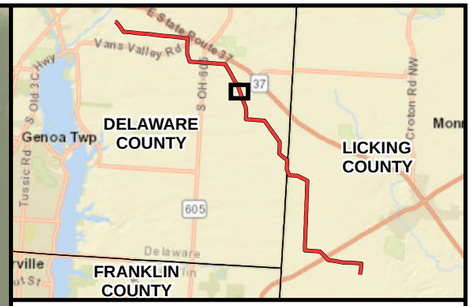

Legend

(Photo Location

Project Survey Area

Vegetative Communities Type

Agricultural Row-Crop

Woodland

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 5
SHEET 11 OF 29
VEGETATIVE COMMUNITIES
ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
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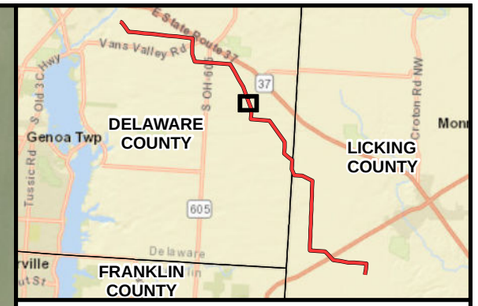

Legend

(Photo Location

Project Survey Area

Vegetative Communities Type

Agricultural Row-Crop

Wetlands/Streams/Ponds

Woodland

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 5
SHEET 12 OF 29
VEGETATIVE COMMUNITIES ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
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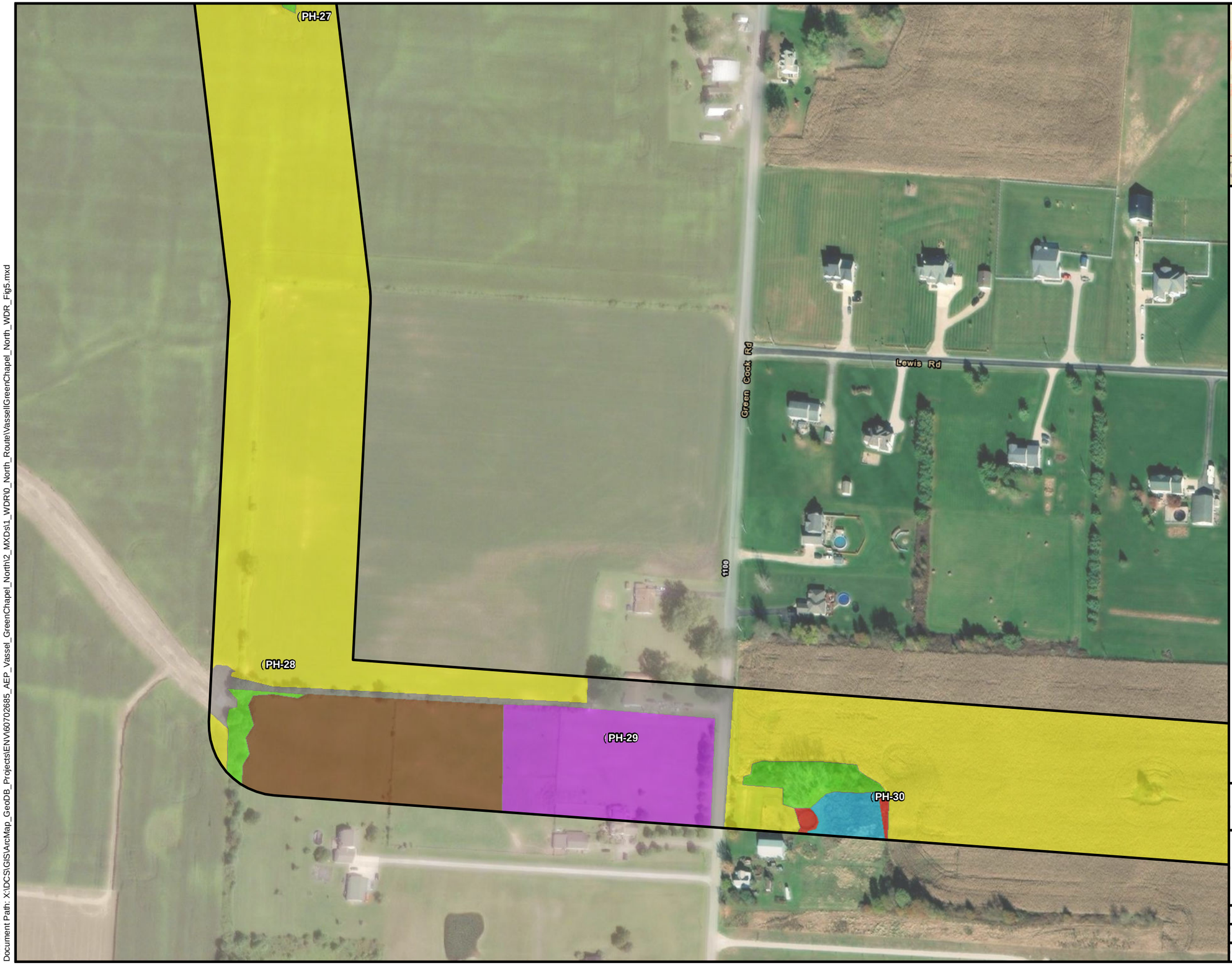
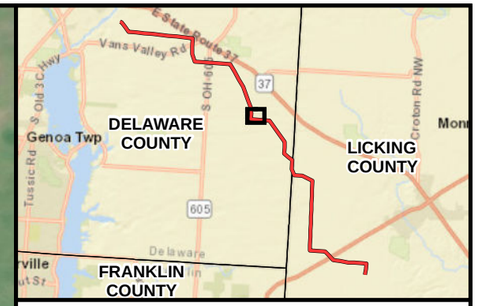




Legend

- (Photo Location
- Project Survey Area

Vegetative Communities Type

- Agricultural Row-Crop
- Landscaped
- Old Field
- Pasture/Hay Fields
- Wetlands/Streams/Ponds
- Urban
- Woodland

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

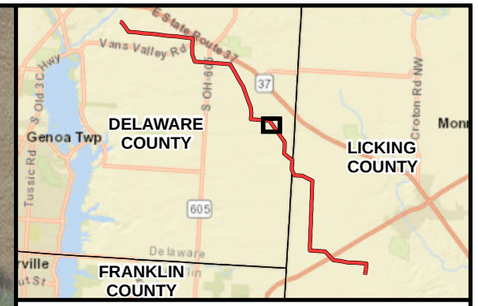
Vassell - Green Chapel North Project

FIGURE 5
SHEET 13 OF 29
VEGETATIVE COMMUNITIES ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
Document Path: X:\DCS\GIS\ArcMap_GeoDB_Projects\ENV\60702685_AEP_Vassel_GreenChapel_North\2_MXDs\1_WDR\0_North_Route\VassellGreenChapel_North_WDR_Fig5.mxd





Legend

(Photo Location

Project Survey Area

Vegetative Communities Type

Agricultural Row-Crop

Woodland

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

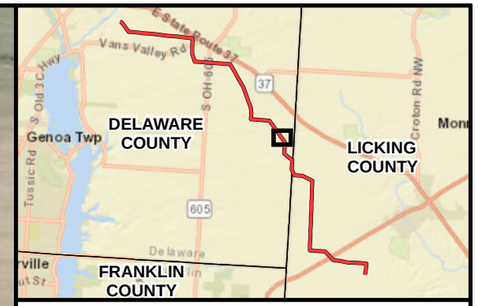
Vassell - Green Chapel North Project

FIGURE 5
SHEET 14 OF 29
VEGETATIVE COMMUNITIES
ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
Document Path: X:\DCS\GIS\ArcMap_GeoDB_Projects\ENV\60702685_AEP_Vassel_GreenChapel_North\2_MXDs\1_WDR\0_North_RouteVassellGreenChapel_North_WDR_Fig5.mxd





Legend

- (Photo Location
- Area Not Surveyed due to Landowner Permissions
- Project Survey Area

Vegetative Communities Type

- Agricultural Row-Crop
- Scrub/Shrub
- Woodland

3

0 100 200 400

Feet

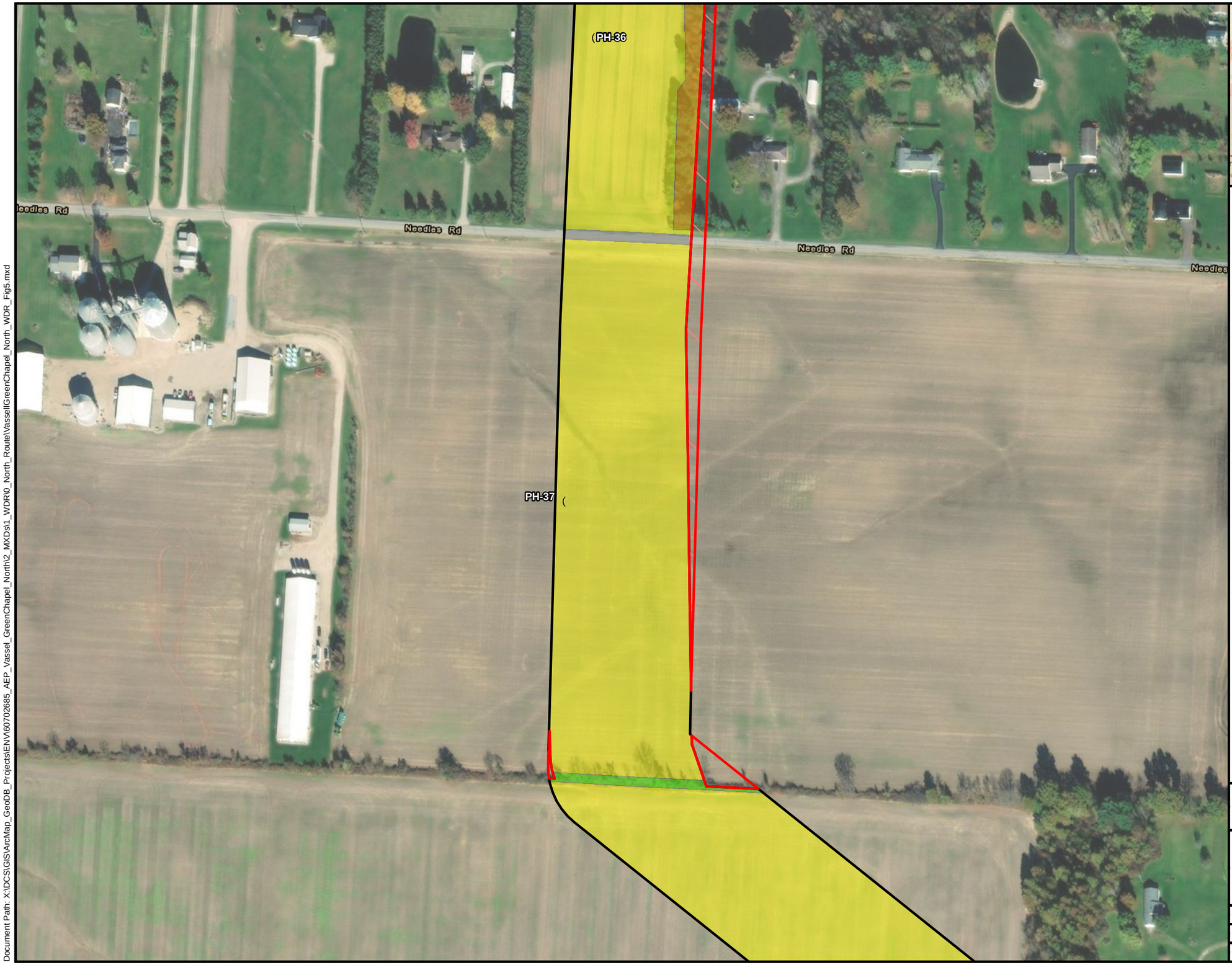
AEP OHIO TRANSMISSION COMPANY

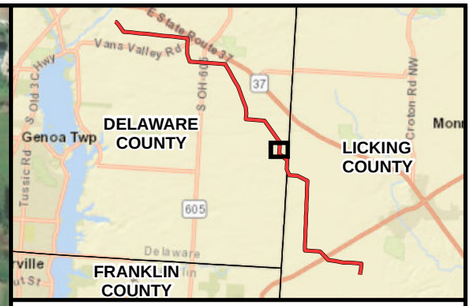
Vassell - Green Chapel North Project

FIGURE 5
SHEET 15 OF 29
VEGETATIVE COMMUNITIES ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
Document Path: X:\DC\SI\GIS\ArcMap_GeoDB_Projects\ENV\60702685_AEP_Vassel_GreenChapel_North\2_MXDs\1_WDR\0_North_Route\VassellGreenChapel_North_WDR_Fig5.mxd





Legend

(Photo Location

Area Not Surveyed due to Landowner Permissions

Project Survey Area

Vegetative Communities Type

- Agricultural Row-Crop
- Scrub/Shrub
- Urban
- Woodland

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

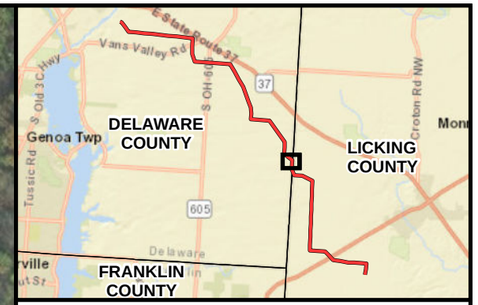
Vassell - Green Chapel North Project

FIGURE 5
SHEET 16 OF 29
VEGETATIVE COMMUNITIES ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
Document Path: X:\DCS\GIS\ArcMap_GeoDB_Projects\ENV\60702685_AEP_Vassel_GreenChapel_North\2_MXDs\1_WDR\0_North_Route\VassellGreenChapel_North_WDR_Fig5.mxd





Legend

- Photo Location
- Project Survey Area

Vegetative Communities Type

- Agricultural Row-Crop
- Landscaped
- Old Field
- Urban
- Woodland

3

0 100 200 400

Feet

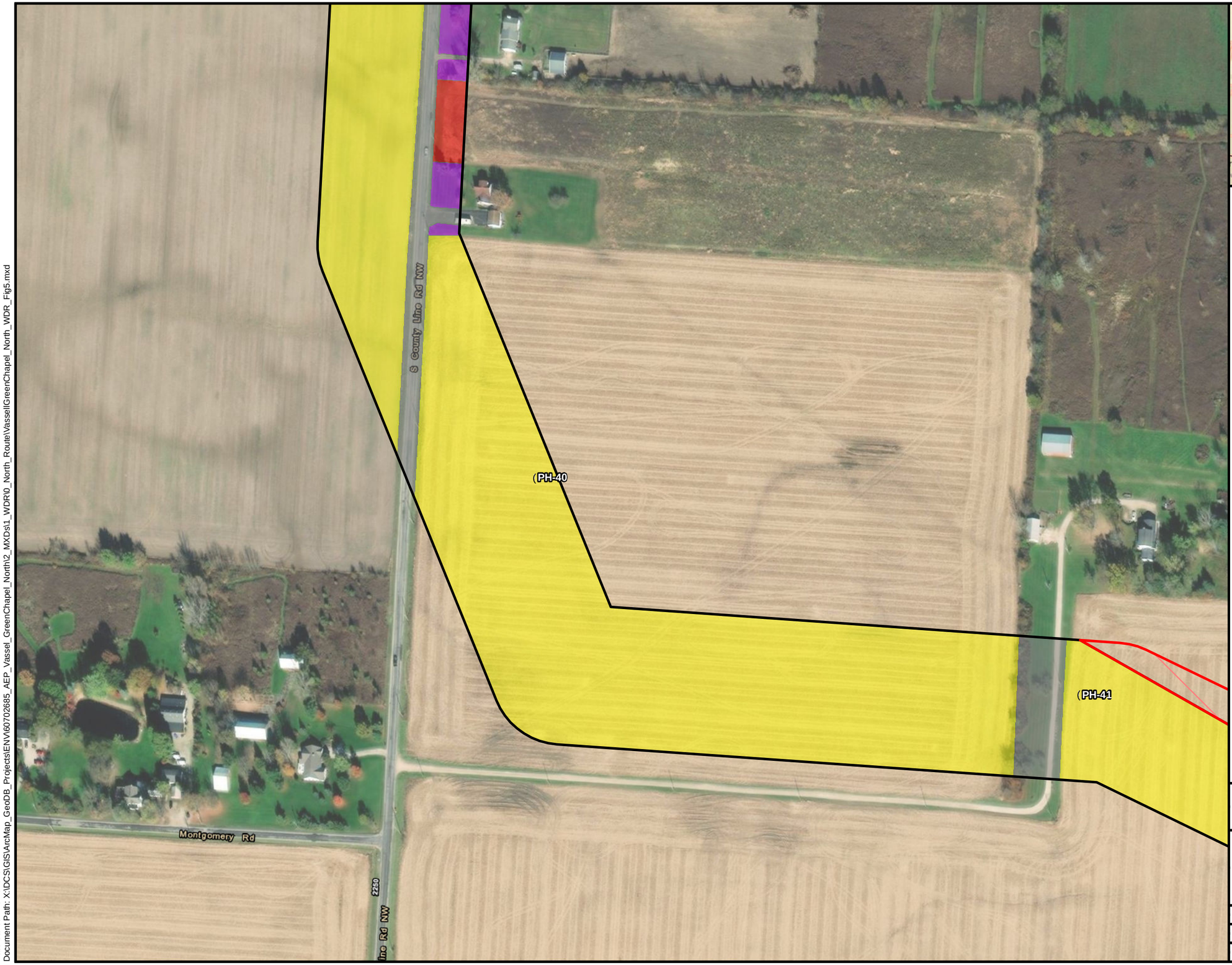
AEP OHIO TRANSMISSION COMPANY

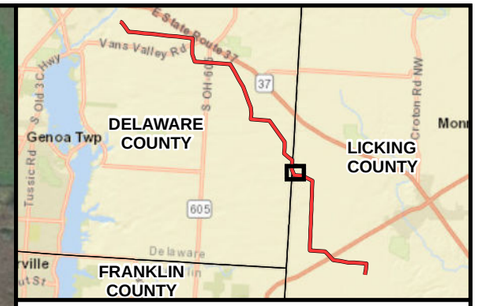
Vassell - Green Chapel North Project

FIGURE 5
SHEET 17 OF 29
VEGETATIVE COMMUNITIES ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
Document Path: X:\DCS\GIS\ArcMap_GeoDB_Projects\ENV\60702685_AEP_Vassel_GreenChapel_North\2_MXDs\1_WDR\0_North_Route\VassellGreenChapel_North_WDR_Fig5.mxd





Legend

(Photo Location

Area Not Surveyed due to Landowner Permissions

Project Survey Area

Vegetative Communities Type

- Agricultural Row-Crop
- Landscaped
- Old Field
- Urban

3

0 100 200 400

Feet

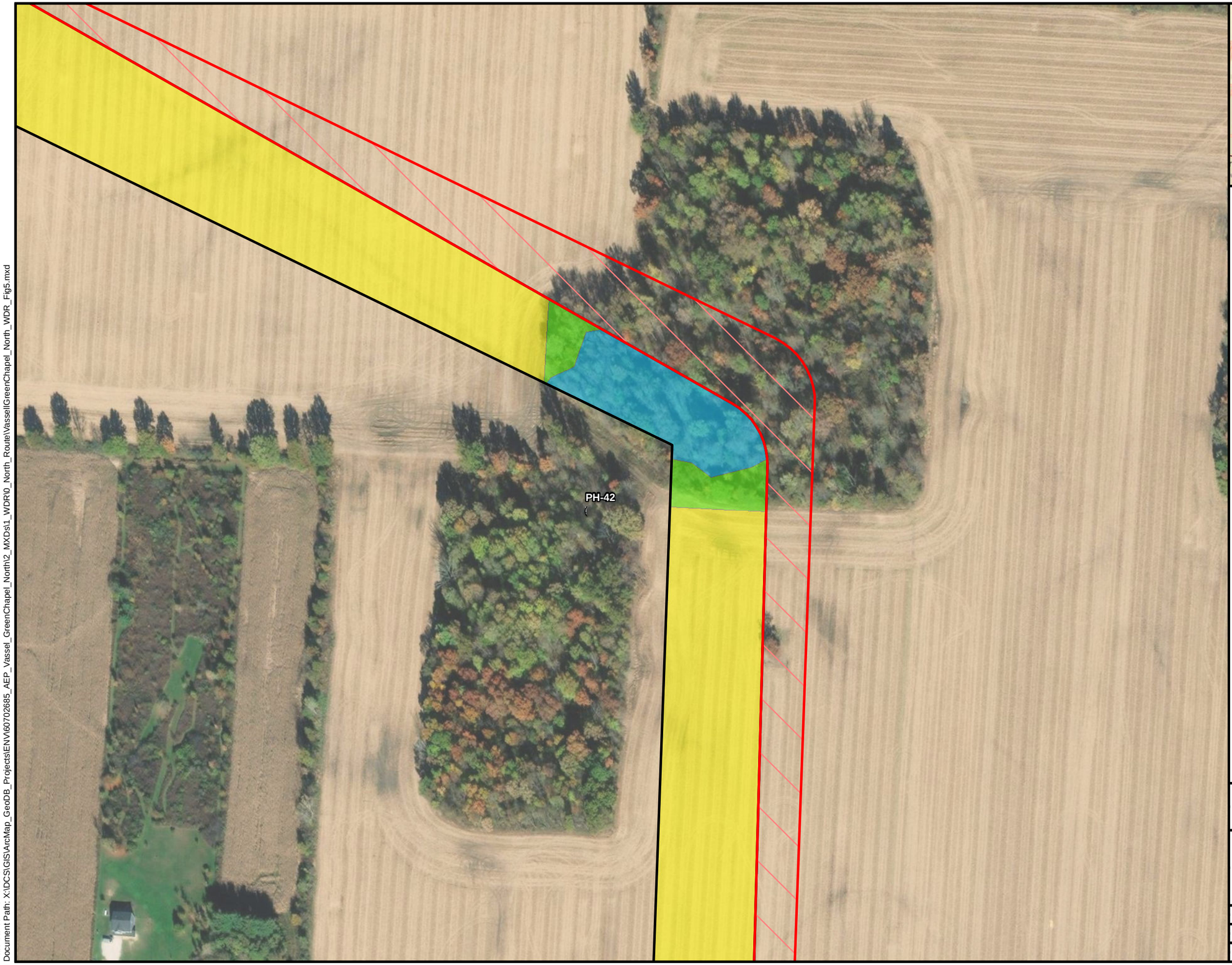
AEP OHIO TRANSMISSION COMPANY

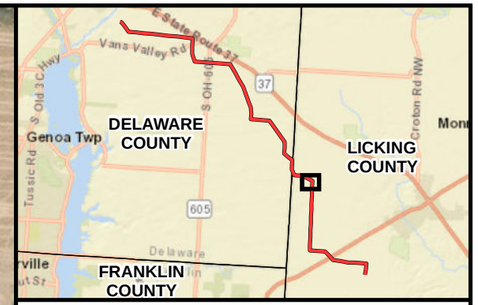
Vassell - Green Chapel North Project

FIGURE 5
SHEET 18 OF 29
VEGETATIVE COMMUNITIES ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
Document Path: X:\DC\SIG\GIS\ArcMap_GeoDB_Projects\ENV\60702685_AEP_Vassel_GreenChapel_North\2_MXDs\1_WDR\0_North_Route\VassellGreenChapel_North_WDR_Fig5.mxd





Legend

- (Photo Location
- Area Not Surveyed due to Landowner Permissions
- Project Survey Area

Vegetative Communities Type

- Agricultural Row-Crop
- Wetlands/Streams/Ponds
- Woodland

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 5
SHEET 19 OF 29
VEGETATIVE COMMUNITIES ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
Document Path: X:\DCS\GIS\ArcMap_GeoDB_Projects\ENV\60702685_AEP_Vassel_GreenChapel_North\2_MXDs\1_WDR\0_North_Route\VassellGreenChapel_North_WDR_Fig5.mxd





Legend

(Photo Location

Area Not Surveyed due to Landowner Permissions

Project Survey Area

Vegetative Communities Type

Agricultural Row-Crop

Urban

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

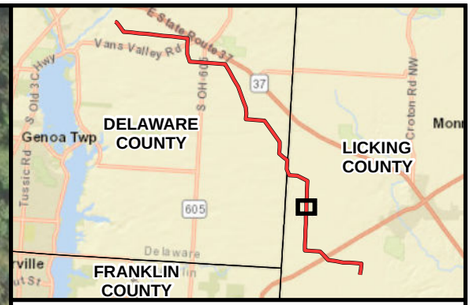
Vassell - Green Chapel North Project

FIGURE 5
SHEET 20 OF 29
VEGETATIVE COMMUNITIES ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
Document Path: X:\DCS\GIS\ArcMap_GeoDB_Projects\ENV\60702685_AEP_Vassel_GreenChapel_North\2_MXDs\1_WDR\0_North_Route\VassellGreenChapel_North_WDR_Fig5.mxd





Legend

- (Photo Location
- Area Not Surveyed due to Landowner Permissions
- Project Survey Area

Vegetative Communities Type

- Agricultural Row-Crop
- Wetlands/Streams/Ponds
- Urban
- Woodland

3

0 100 200 400

Feet

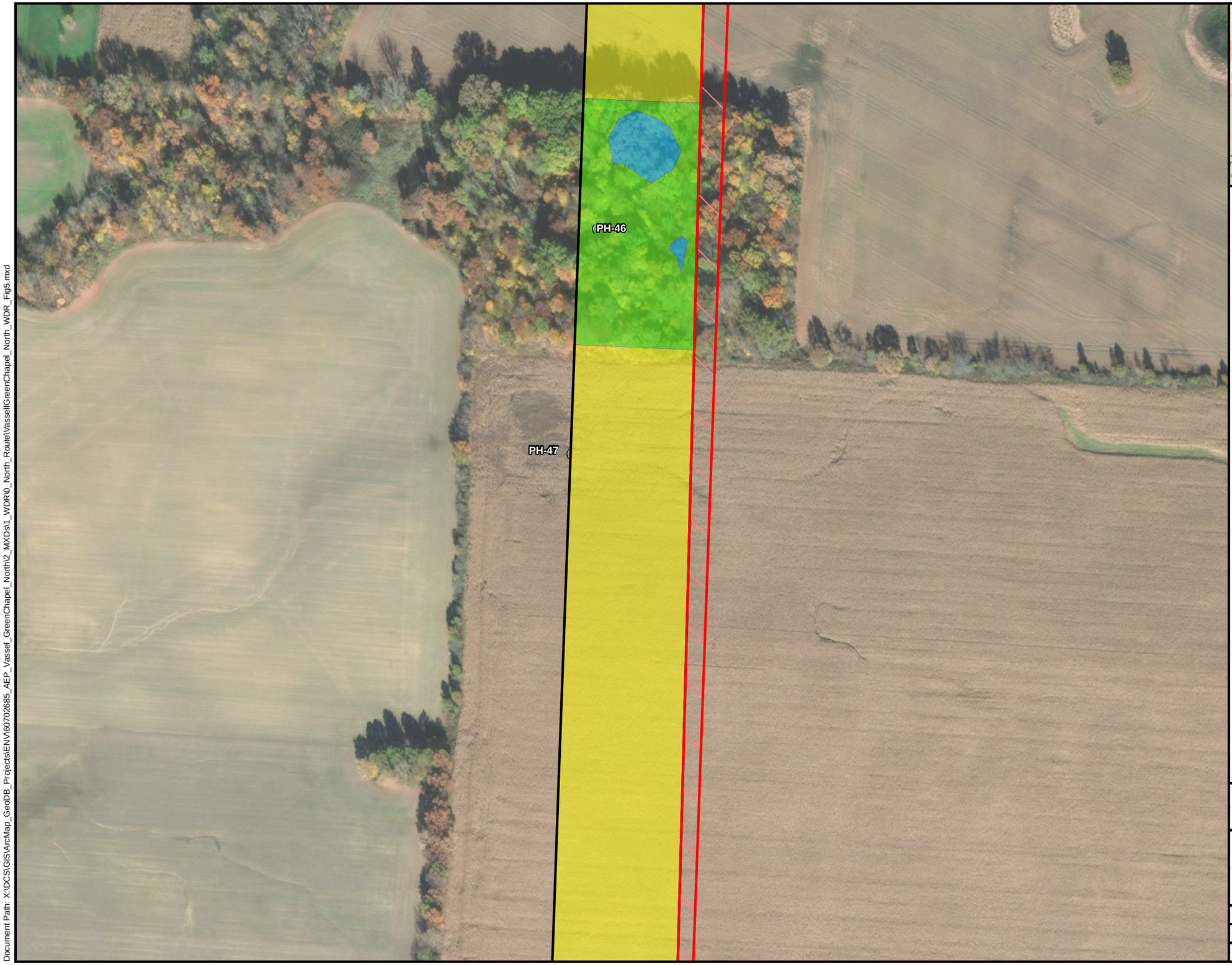
AEP OHIO TRANSMISSION COMPANY

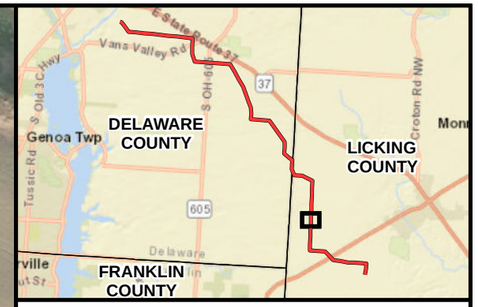
Vassell - Green Chapel North Project

FIGURE 5
SHEET 21 OF 29
VEGETATIVE COMMUNITIES ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
Document Path: X:\IDCS\GIS\ArcMap_GeoDB_Projects\ENV\60702685_AEP_Vassel_GreenChapel_North\2_MXDs\1_WDR\0_North_Route\VassellGreenChapel_North_WDR_Fig5.mxd





Legend

(Photo Location

Area Not Surveyed due to Landowner Permissions

Project Survey Area

Vegetative Communities Type

Agricultural Row-Crop

Wetlands/Streams/Ponds

Woodland

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 5
SHEET 22 OF 29
VEGETATIVE COMMUNITIES ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
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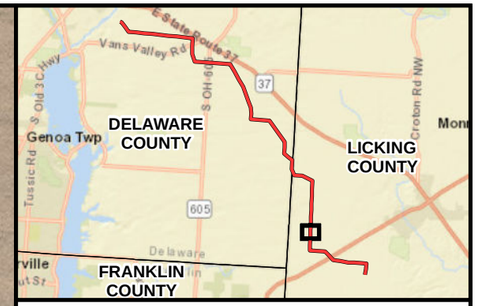

Legend

(Photo Location

Area Not Surveyed due to Landowner Permissions

Project Survey Area

Vegetative Communities Type

Agricultural Row-Crop

Wetlands/Streams/Ponds

Woodland

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 5
SHEET 23 OF 29
VEGETATIVE COMMUNITIES ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
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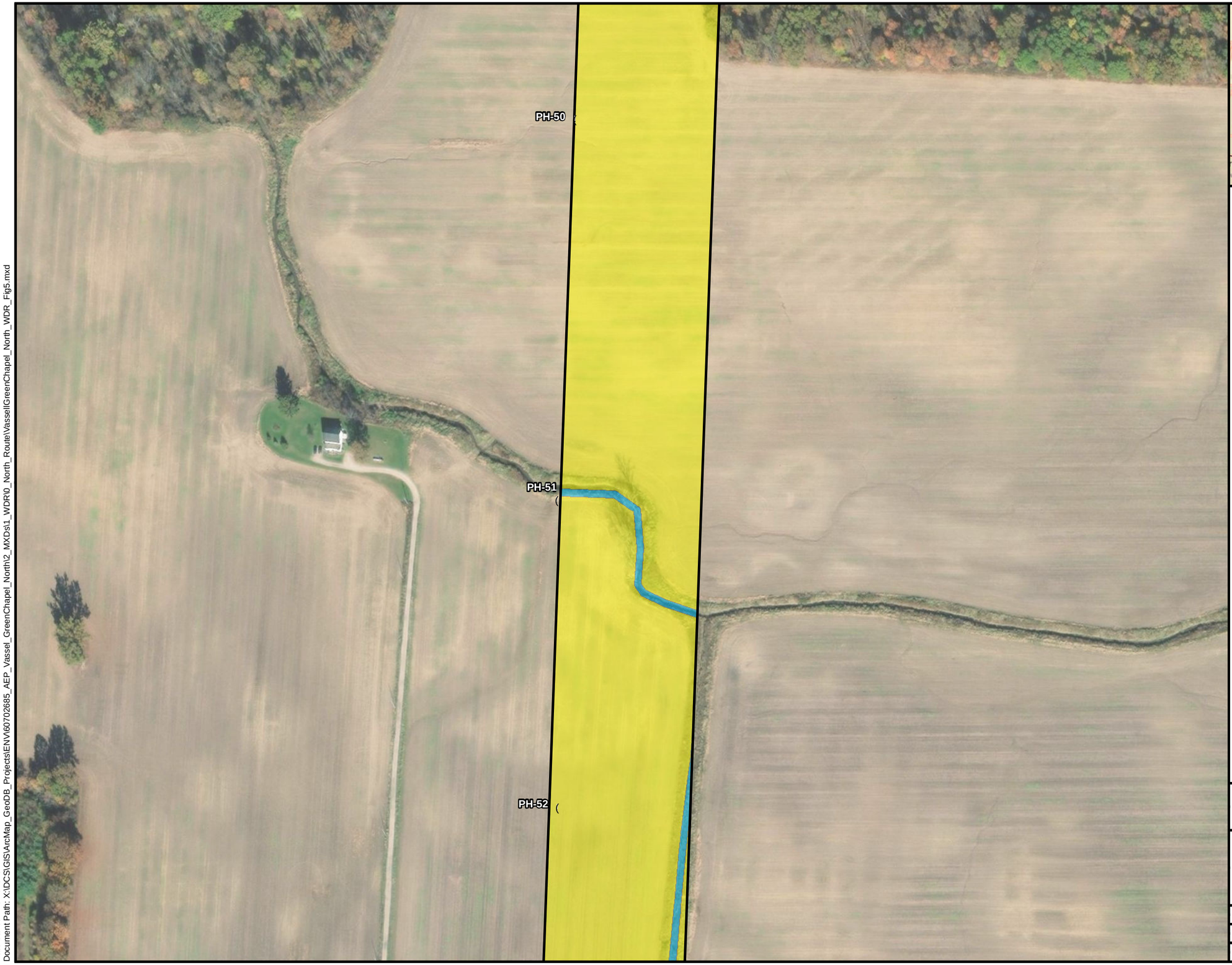

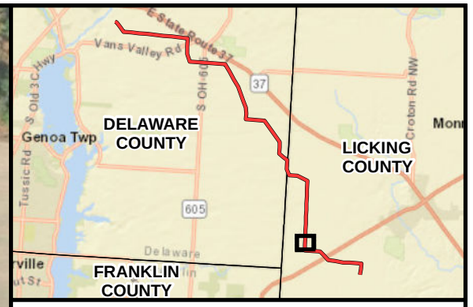

Legend

(Photo Location

Project Survey Area

Vegetative Communities Type

Agricultural Row-Crop

Wetlands/Streams/Ponds

Woodland

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 5
SHEET 24 OF 29
VEGETATIVE COMMUNITIES ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
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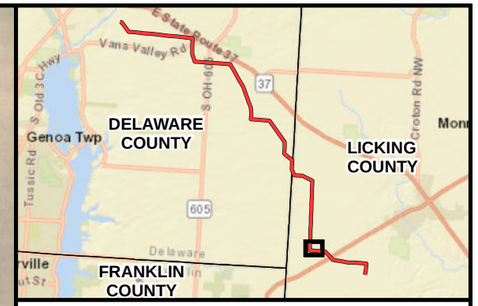


Legend

- Photo Location
- Area Not Surveyed due to Landowner Permissions
- Project Survey Area

Vegetative Communities Type

- Agricultural Row-Crop
- Pasture/Hay Fields
- Wetlands/Streams/Ponds
- Woodland

3

0 100 200 400

Feet

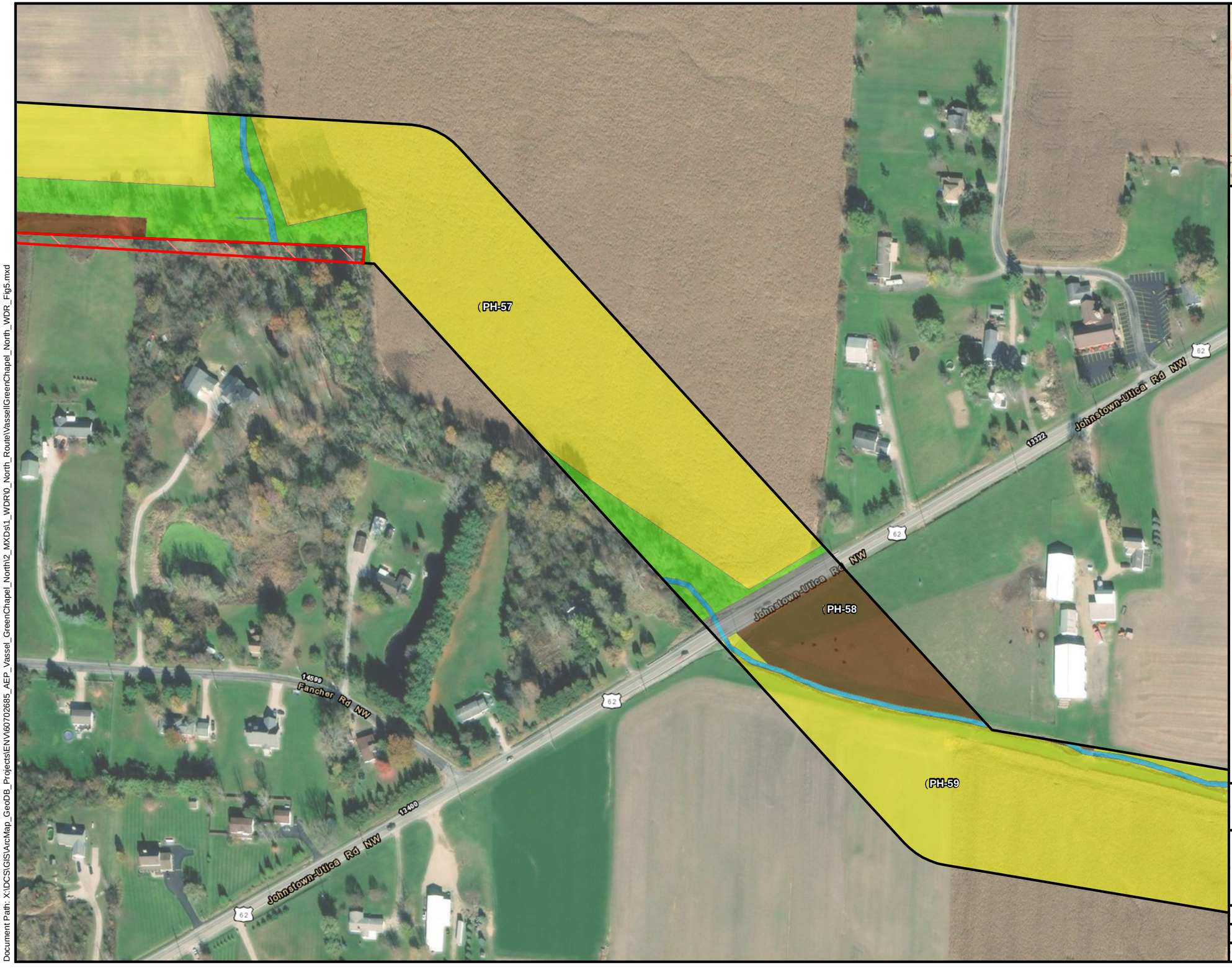
AEP OHIO TRANSMISSION COMPANY

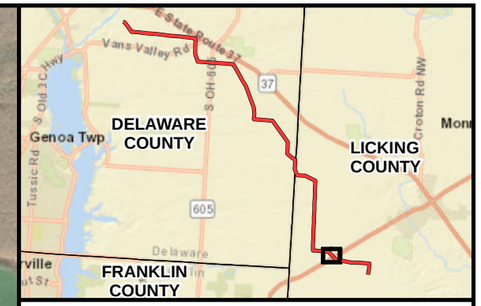
Vassell - Green Chapel North Project

FIGURE 5
SHEET 25 OF 29
VEGETATIVE COMMUNITIES ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
Document Path: X:\DCS\GIS\ArcMap_GeoDB_Projects\ENV\60702685_AEP_Vassel_GreenChapel_North\2_MXDs\1_WDR\0_North_Route\VassellGreenChapel_North_WDR_Fig5.mxd





Legend

- (Photo Location
- Area Not Surveyed due to Landowner Permissions
- Project Survey Area

Vegetative Communities Type

- Agricultural Row-Crop
- Pasture/Hay Fields
- Wetlands/Streams/Ponds
- Urban
- Woodland

3

0 100 200 400

Feet

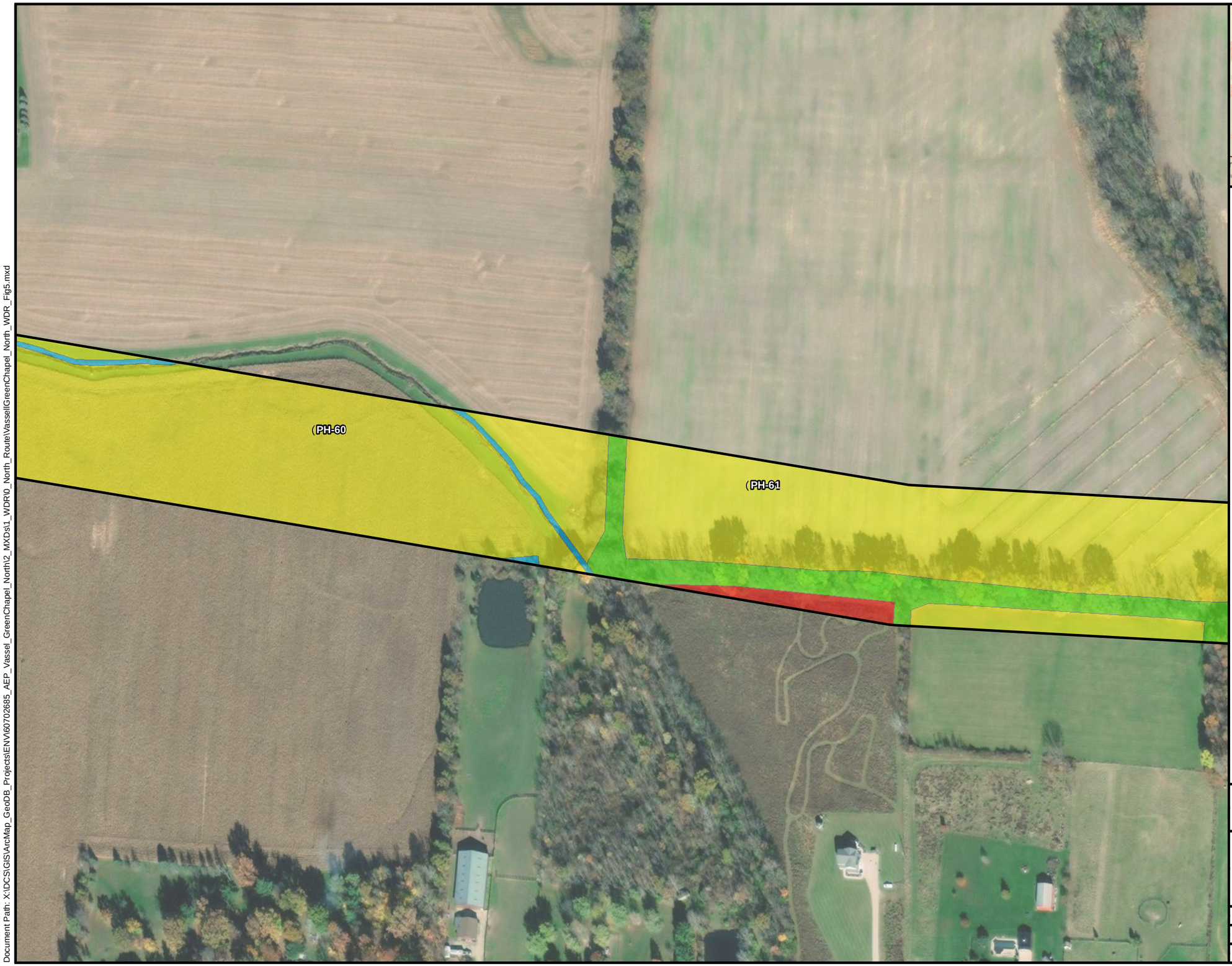
AEP OHIO TRANSMISSION COMPANY

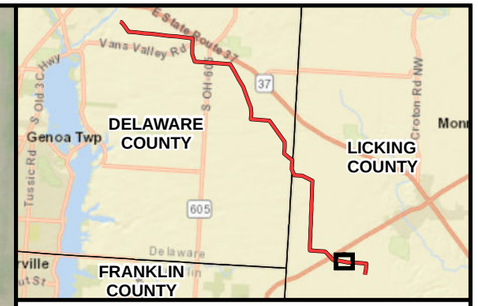
Vassell - Green Chapel North Project

FIGURE 5
SHEET 26 OF 29
VEGETATIVE COMMUNITIES ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
Document Path: X:\DCS\GIS\ArcMap_GeoDB_Projects\ENV\60702685_AEP_Vassel_GreenChapel_North\2_MXDs\1_WDR\0_North_Route\VassellGreenChapel_North_WDR_Fig5.mxd





Legend

(Photo Location

Project Survey Area

Vegetative Communities Type

- Agricultural Row-Crop
- Old Field
- Wetlands/Streams/Ponds
- Woodland

3

0 100 200 400

Feet

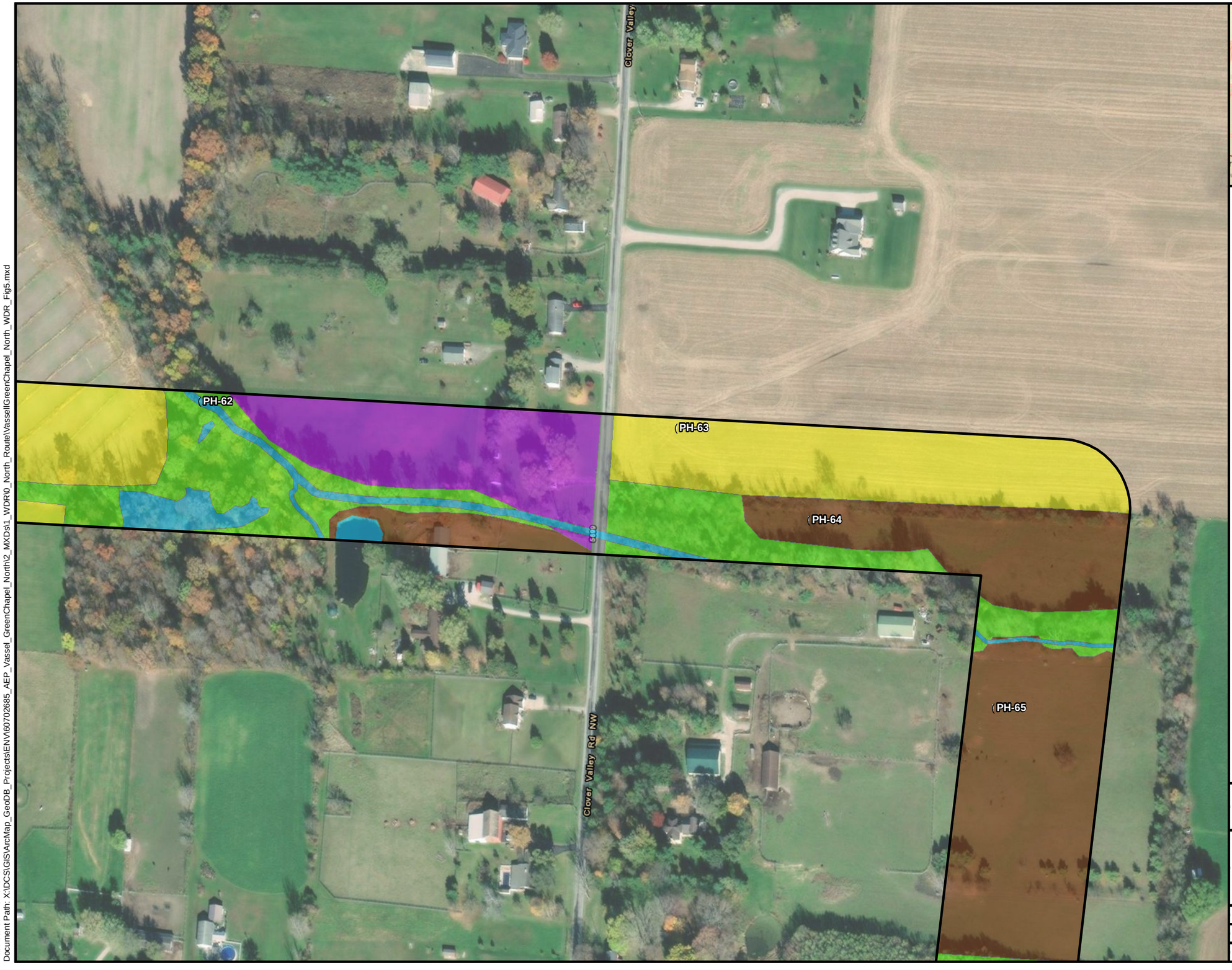
AEP OHIO TRANSMISSION COMPANY

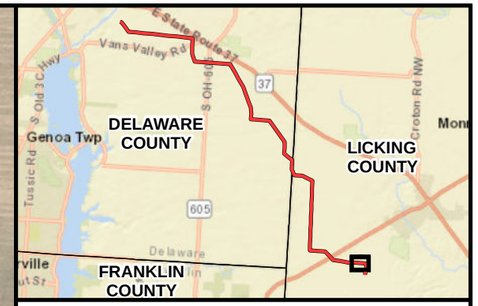
Vassell - Green Chapel North Project

FIGURE 5
SHEET 27 OF 29
VEGETATIVE COMMUNITIES ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
Document Path: X:\DCS\GIS\ArcMap_GeoDB_Projects\ENV\60702685_AEP_Vassel_GreenChapel_North\2_MXDs\1_WDR\0_North_Route\VassellGreenChapel_North_WDR_Fig5.mxd





Legend

- Photo Location
- Project Survey Area

Vegetative Communities Type

- Agricultural Row-Crop
- Landscaped
- Pasture/Hay Fields
- Scrub/Shrub
- Wetlands/Streams/Ponds
- Urban
- Woodland

3

0 100 200 400

Feet

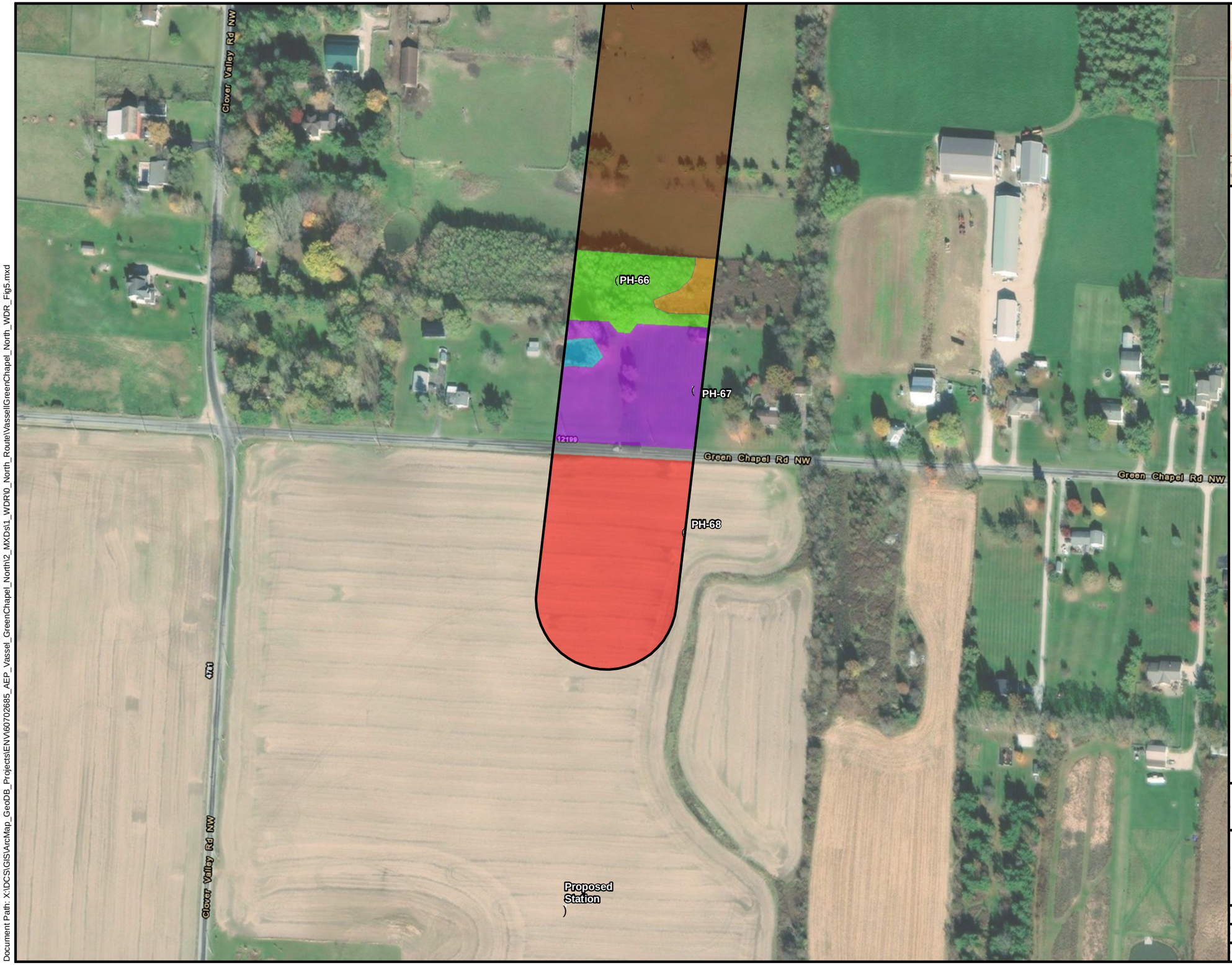
AEP OHIO TRANSMISSION COMPANY

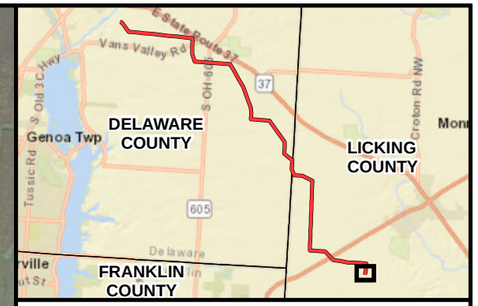
Vassell - Green Chapel North Project

FIGURE 5
SHEET 28 OF 29
VEGETATIVE COMMUNITIES ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
Document Path: X:\DCS\GIS\ArcMap_GeoDB_Projects\ENV\60702685_AEP_Vassel_GreenChapel_North\2_MXDs\1_WDR\0_North_Route\VassellGreenChapel_North_WDR_Fig5.mxd





Legend

-) Station
- (Photo Location
- Project Survey Area

Vegetative Communities Type

- Landscaped
- Old Field
- Pasture/Hay Fields
- Scrub/Shrub
- Wetlands/Streams/Ponds
- Urban
- Woodland

3

0 100 200 400

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 5
SHEET 29 OF 29
VEGETATIVE COMMUNITIES ASSESSMENT MAP

DATE: 12/14/2023	1 INCH = 200 FEET
CREATED BY: NB	CHECKED BY: BG
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
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No karst features and/ or sinkholes are within the extent of the map frame.

Existing
Vassell Station
40.22837, -82.852709

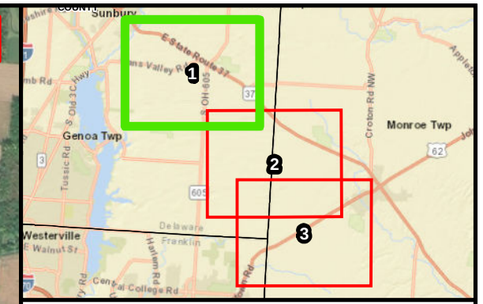
BERKSHIRE TOWNSHIP

TRENTON TOWNSHIP

Sunbury

GENOA TOWNSHIP

HARLEM TOWNSHIP



Legend

- Station
- Vassell - Green Chapel North Route
- Quarter Mile Review Area
- Mine - Bedrock Geologic Maps
- Surface Industrial Minerals Mine Operation
- Ohio USGS 7.5' Topographic Quadrangle
- Township Boundary
- County Boundary

3

0 2,000 4,000
Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 6
SHEET 1 OF 3
DESKTOP ASSESSMENT
FOR WINTER BAT HABITAT

DATE: 12/14/2023	1 INCH = 2,000 FEET
CREATED BY: NAB	CHECKED BY: AF
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
Document Path: X:\DCS\GIS\ArcMap_GeoDB_Projects\ENV\60702685_AEP_Vassel_GreenChapel_North\2_MXDs\1_WDR\0_North_Route\VasselGreenChapel_North_WDR_Fig6.mxd

No mining features and/or sinkholes are within the extent of the map frame.

HARLEM TOWNSHIP

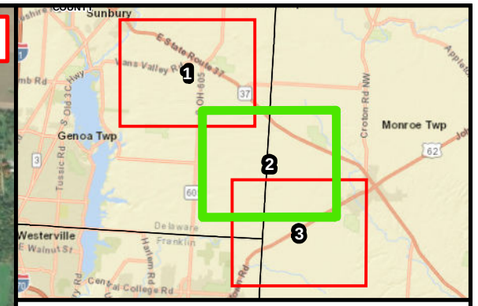
MONROE TOWNSHIP

Sunbury

Johnstown

DELAWARE COUNTY

LICKING COUNTY



Legend

- Vassell - Green Chapel North Route
- Quarter Mile Review Area
- Karst - Suspect-Field Visited
- Ohio USGS 7.5' Topographic Quadrangle
- Township Boundary
- County Boundary

3

0 2,000 4,000

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 6
SHEET 2 OF 3
DESKTOP ASSESSMENT
FOR WINTER BAT HABITAT

DATE: 12/14/2023	1 INCH = 2,000 FEET
CREATED BY: NAB	CHECKED BY: AF
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
Document Path: X:\DCS\GIS\ArcMap_GeoDB_Projects\ENV\60702685_AEP_Vassel_GreenChapel_North\2_MXDs\1_WDR\0_North_Route\VasselGreenChapel_North_WDR_Fig6.mxd

No mining features and/or sinkholes are within the extent of the map frame.

Sunbury

HARLEM TOWNSHIP

DELAWARE COUNTY

LICKING COUNTY

MONROE TOWNSHIP

Johnstown

DELAWARE COUNTY

FRANKLIN COUNTY

PLAIN TOWNSHIP

New Albany

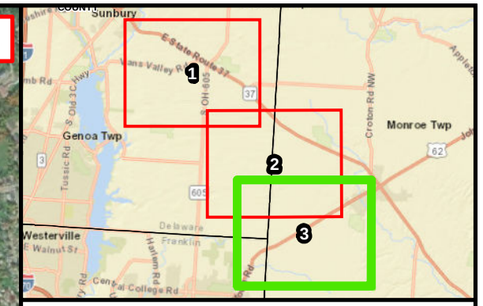
FRANKLIN COUNTY

LICKING COUNTY

JERSEY TOWNSHIP

Jersey

Proposed Station
40.121519,
-82.719497



Legend

- Station
- Vassell - Green Chapel North Route
- Quarter Mile Review Area
- Karst - Field Verified
- Ohio USGS 7.5' Topographic Quadrangle
- Township Boundary
- County Boundary

3

0 2,000 4,000

Feet

AEP OHIO TRANSMISSION COMPANY

Vassell - Green Chapel North Project

FIGURE 6
SHEET 3 OF 3
DESKTOP ASSESSMENT
FOR WINTER BAT HABITAT

DATE: 12/14/2023	1 INCH = 2,000 FEET
CREATED BY: NAB	CHECKED BY: AF
JOB NO.: 60702685	AECOM

Date Saved: 12/14/2023
Document Path: X:\DCS\GIS\ArcMap_GeoDB_Projects\ENV\60702685_AEP_Vassel_GreenChapel_North\2_MXDs\1_WDR\0_North_Route\VasselGreenChapel_North_WDR_Fig6.mxd

APPENDIX A

U.S. ARMY CORPS OF ENGINEERS WETLAND DATA FORMS

AND REPRESENTATIVE PHOTOGRAPHS

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Delaware | Sampling Date: 07-Jun-23

Applicant/Owner: AEP | State: OH | Sampling Point: **W-CRW-001 PEM**

Investigator(s): C.R.Wyse | Section, Township, Range: S | T 4N | R 16W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): concave

Slope: 0.0% / 0.0 ° | Lat.: 40.224988 | Long.: -82.850404 | Datum: NAD83

Soil Map Unit Name: Cen1B1: Centerburg silt loam, 2 to 6 percent slopes | NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☑ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ◉

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
PEM wetland, W-CRW-001, is located between a constructed hill and an upland woods fence row. Deineated by topo and veg. Soils may be disturbed.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	0
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. Carex vulpinoidea	20	☑ 27.0%	FACW
2. Scirpus pendulus	15	☑ 20.3%	OBL
3. Poa pratensis	15	☑ 20.3%	FAC
4. Carex stricta	10	☐ 13.5%	OBL
5. Toxicodendron radicans	5	☐ 6.8%	FAC
6. Solidago canadensis	5	☐ 6.8%	FACU
7. Agrimonia eupatoria	3	☐ 4.1%	UPL
8. Acer negundo	1	☑ 1.4%	FAC
9.	0	☐ 0.0%	FAC
10.	0	☐ 0.0%	
	74	= Total Cover	
Woody Vine Stratum (Plot size: 15' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	20	x 2 =	40
FAC species	36	x 3 =	108
FACU species	5	x 4 =	20
UPL species	3	x 5 =	15
Column Totals:	89 (A)		208 (B)

Prevalence Index = B/A = 2.337

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☑ **2 - Dominance Test is > 50%**
- ☑ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)
See Appendix for the Wetland Delineation Report for representative photographs of the habitat and soil profile.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-CRW-001 PEM**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 5/3	90	10YR 6/6	10	C	PL	Clay	silty clay
								hard soils prevented examination beyond 8 inches

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☑ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Hard gravel layer at 8 inches

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

Source of hydrology was identified as precipitation.Indicatiors included geomorphic position as well as water stained leaves.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Delaware | Sampling Date: 07-Jun-23

Applicant/Owner: AEP | State: OH | Sampling Point: **W-CRW-001-002-UPL**

Investigator(s): C.R.Wyse | Section, Township, Range: S | T 4N | R 16W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): flat

Slope: 10.0% / 5.7 ° | Lat.: 40.225237 | Long.: -82.850372 | Datum: NAD83

Soil Map Unit Name: BeA, Bennington silt loam, 0 to 2 percent slopes | NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☑, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks:
Upland point taken upslope on what appears to be constructed berm between delineated W-CRW-001 and W-CRW-002.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	0
	0	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	0	= Total Cover		

Herb Stratum (Plot size: 5' radius)				
1. Melilotus officinalis	35	☑	28.0%	FACU
2. Solidago canadensis	30	☑	24.0%	FACU
3. Tridens flavus	25	☑	20.0%	UPL
4. Poa pratensis	15	☐	12.0%	FAC
5. Trifolium pratense	10	☐	8.0%	FACU
6. Heracleum mantegazzianum	5	☐	4.0%	FAC
7.	5	☐	4.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	125	= Total Cover		

Woody Vine Stratum (Plot size: 15' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	20	x 3 =	60
FACU species	75	x 4 =	300
UPL species	25	x 5 =	125
Column Totals:	120 (A)		485 (B)

Prevalence Index = B/A = 4.042

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☐ **2 - Dominance Test is > 50%**
- ☐ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic veg indicators not met. Photos=5412-5416

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-CRW-001-002-UPL**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 4/4	90	10YR 5/6	10	C	M	Silty Clay	
7-10	10YR 5/6	75	10YR 4/4	25			Silty Clay	Mixed matrix

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Very dry, could be fill dirt

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

No hydrology present, source=precip

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Delaware | Sampling Date: 14-Jun-23

Applicant/Owner: AEP | State: OH | Sampling Point: **W-MRK-001 PEM**

Investigator(s): MRK, AJH | Section, Township, Range: S | T 4N | R 16W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): concave

Slope: 1.0% / 0.6 ° | Lat.: 40.222487 | Long.: -82.82607 | Datum: NAD83

Soil Map Unit Name: Bennington silt loam, 0 to 2 percent slopes | NWI classification: PEM1C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
PEM section of a PEM/PFO wetland located within a large depression collecting surface runoff and seasonal flooding. Signs of standing water were observed throughout the wetland. Wetland continues outside current study area.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	0
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. Carex vulpinoidea	75	☑ 45.5%	FACW
2. Toxicodendron radicans	20	☑ 12.1%	FAC
3. Microstegium vimineum	20	☑ 12.1%	FAC
4. Panicum virgatum	15	☐ 9.1%	FAC
5. Juncus effusus	15	☐ 9.1%	OBL
6. Typha angustifolia	10	☐ 6.1%	OBL
7. Solidago rugosa	10	☐ 6.1%	FAC
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
	165	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	75	x 2 =	150
FAC species	65	x 3 =	195
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	165 (A)		370 (B)

Prevalence Index = B/A = 2.242

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☑ **2 - Dominance Test is > 50%**
- ☑ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-001 PEM**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR	3/1	80	10YR	4/6	20	C	M	Silt Loam	

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☑ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ◉ No ○ Depth (inches): 4

Saturation Present? (includes capillary fringe) Yes ◉ No ○ Depth (inches): 2

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

The source of hydrology is surface runoff and seasonal flooding.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Delaware | Sampling Date: 14-Jun-23

Applicant/Owner: AEP | State: OH | Sampling Point: **W-MRK-001 PFO**

Investigator(s): MRK, AJH | Section, Township, Range: S | T 4N | R 16W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): concave

Slope: 1.0% / 0.6 ° | Lat.: 40.222258 | Long.: -82.827372 | Datum: NAD83

Soil Map Unit Name: Pewamo silty clay loam, 0 to 1 percent slopes | NWI classification: PFO1C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
PFO section of a PEM/PFO wetland located within a large depression collecting surface runoff and seasonal flooding. Signs of standing water were observed throughout the wetland. Wetland continues outside current study area.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer rubrum	30	☑	50.0%	FAC
2. Acer negundo	20	☑	33.3%	FAC
3. Quercus palustris	10	☐	16.7%	FACW
4.	0	☐	0.0%	
5.	0	☐	0.0%	0
	60	= Total Cover		

Sapling/Shrub Stratum (Plot size: 15' radius)				
1. Lindera benzoin	30	☑	60.0%	FACW
2. Acer negundo	10	☑	20.0%	FAC
3. Cornus amomum	10	☑	20.0%	FACW
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	50	= Total Cover		

Herb Stratum (Plot size: 5' radius)				
1. Dichanthelium clandestinum	75	☑	71.4%	FACW
2. Carex lurida	20	☐	19.0%	OBL
3. Panicum virgatum	10	☐	9.5%	FAC
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	105	= Total Cover		

Woody Vine Stratum (Plot size: 30' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	125	x 2 =	250
FAC species	70	x 3 =	210
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	215 (A)		480 (B)

Prevalence Index = B/A = 2.233

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☑ **2 - Dominance Test is > 50%**
- ☑ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-001 PFO**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR	3/1	80	10YR	4/6	20	C	M	Silt Loam	

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

The source of hydrology is surface runoff and seasonal flooding.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Delaware | Sampling Date: 14-Jun-23

Applicant/Owner: AEP | State: OH | Sampling Point: **W-MRK-001-002 UPL**

Investigator(s): MRK, AJH | Section, Township, Range: S | T 4N | R 16W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): convex

Slope: 1.0% / 0.6 ° | Lat.: 40.222459 | Long.: -82.825338 | Datum: NAD83

Soil Map Unit Name: Bennington silt loam, 0 to 2 percent slopes | NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks:
Upland data point for W-MRK-001 and W-MRK-002. Upland data was collected within an agricultural field.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	0
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. Zea mays	50	☑ 100.0%	UPL
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
	50	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	50	x 5 =	250
Column Totals:	50 (A)		250 (B)

Prevalence Index = B/A = 5.000

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☐ **2 - Dominance Test is > 50%**
- ☐ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-001-002 UPL**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR	4/2	100						Silty Clay Loam	
14-16	10YR	4/2	95	10YR	5/6	5	C	M	Silty Clay Loam	

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

No source of hydrology was observed.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Delaware | Sampling Date: 14-Jun-23

Applicant/Owner: AEP | State: OH | Sampling Point: **W-MRK-002 PEM**

Investigator(s): MRK, AJH | Section, Township, Range: S | T 4N | R 16W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): concave

Slope: 1.0% / 0.6 ° | Lat.: 40.222414 | Long.: -82.824598 | Datum: NAD83

Soil Map Unit Name: Bennington silt loam, 0 to 2 percent slopes | NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
PEM section of a PEM/PFO wetland located within a large depression collecting surface runoff and seasonal flooding. Signs of standing water were observed throughout the wetland. Wetland continues outside current study area.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	0	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	0	= Total Cover		
Herb Stratum (Plot size: 5' radius)				
1. Carex vulpinoidea	50	☑	41.7%	FACW
2. Juncus effusus	20	☐	16.7%	OBL
3. Dichanthelium clandestinum	20	☐	16.7%	FACW
4. Toxicodendron radicans	25	☑	20.8%	FAC
5. Phalaris arundinacea	5	☐	4.2%	FACW
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	120	= Total Cover		
Woody Vine Stratum (Plot size: 30' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	20	x 1 =	20
FACW species	75	x 2 =	150
FAC species	25	x 3 =	75
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	120 (A)		245 (B)

Prevalence Index = B/A = 2.042

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☑ **2 - Dominance Test is > 50%**
- ☑ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-002 PEM**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR	4/2	90	10YR	5/8	10	C	M	Silty Clay Loam	

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☑ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ◉ No ○ Depth (inches): 1

Water Table Present? Yes ◉ No ○ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes ◉ No ○ Depth (inches): 0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

The source of hydrology is surface runoff and seasonal flooding.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Delaware | Sampling Date: 14-Jun-23

Applicant/Owner: AEP | State: OH | Sampling Point: **W-MRK-002 PFO**

Investigator(s): MRK, AJH | Section, Township, Range: S | T 4N | R 16W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): concave

Slope: 1.0% / 0.6 ° | Lat.: 40.22207 | Long.: -82.824641 | Datum: NAD83

Soil Map Unit Name: Bennington silt loam, 0 to 2 percent slopes | NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
PFO section of a PEM/PFO wetland located within a large depression collecting surface runoff and seasonal flooding. Signs of standing water were observed throughout the wetland. Wetland continues outside current study area.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. Acer rubrum	25	☑ 35.7%	FAC
2. Quercus palustris	25	☑ 35.7%	FACW
3. Acer saccharinum	15	☑ 21.4%	FACW
4. Carya glabra	5	☐ 7.1%	FACU
5.	0	☐ 0.0%	0
	70	= Total Cover	

Sapling/Shrub Stratum (Plot size: 15' radius)			
1. Ulmus rubra	10	☑ 100.0%	FAC
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	10	= Total Cover	

Herb Stratum (Plot size: 5' radius)			
1. Toxicodendron radicans	30	☑ 75.0%	FAC
2. Carex vulpinoidea	10	☑ 25.0%	FACW
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
	40	= Total Cover	

Woody Vine Stratum (Plot size: 30' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	50	x 2 =	100
FAC species	65	x 3 =	195
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	120 (A)		315 (B)

Prevalence Index = B/A = 2.625

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☑ **2 - Dominance Test is > 50%**
- ☑ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-002 PFO**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR	4/1	75	10YR	4/6	25	C	PL	Silt Loam	

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

The source of hydrology is surface runoff and seasonal flooding.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Licking | Sampling Date: 15-Jun-23

Applicant/Owner: AEP | State: OH | Sampling Point: W-MRK-004 PFO

Investigator(s): MRK, AJH | Section, Township, Range: S | T 3N | R 15W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): concave

Slope: 1.0% / 0.6 ° | Lat.: 40.148161 | Long.: -82.748641 | Datum: NAD83

Soil Map Unit Name: Pewamo silty clay loam, low carbonate till, 0 to 2 percent slopes | NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	Is the Sampled Area within a Wetland? **Yes** ◉ **No** ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
This PFO wetland is located within a forested depression. Depression is collecting surface runoff from the surrounding area and is seasonally inundated. Wetland boundary follows edge of depression.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. Acer rubrum	30	☑ 100.0%	FAC
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	0
	30	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. Acer rubrum	20	☑ 66.7%	FAC
2. Ulmus rubra	10	☑ 33.3%	FAC
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	30	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. Toxicodendron radicans	10	☑ 66.7%	FAC
2. Glyceria striata	5	☑ 33.3%	OBL
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
	15	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	0	x 2 =	0
FAC species	70	x 3 =	210
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	75 (A)		215 (B)

Prevalence Index = B/A = 2.867

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is > 50%
- ☑ 3 - Prevalence Index is ≤3.0 [1]
- ☐ 4 - Morphological Adaptations [1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation [1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ◉ **No** ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-004 PFO**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR	3/1	100							
8-16	10YR	3/1	90	10YR	4/6	10	C	M,PL	Silty Clay Loam	5% oxidized rhizospheres

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

[2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? **Yes** ◉ **No** ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☑ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? **Yes** ◉ **No** ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

The source of hydrology is surface runoff and seasonal flooding.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Licking | Sampling Date: 15-Jun-23

Applicant/Owner: AEP | State: OH | Sampling Point: W-MRK-005 PFO

Investigator(s): MRK, AJH | Section, Township, Range: S | T 3N | R 15W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): concave

Slope: 1.0% / 0.6 ° | Lat.: 40.147472 | Long.: -82.748273 | Datum: NAD83

Soil Map Unit Name: Centerburg silt loam, 2 to 6 percent slopes | NWI classification: PFO1C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	Is the Sampled Area within a Wetland? **Yes** ◉ **No** ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
This PFO wetland is located within a forested depression. Depression is collecting surface runoff from the surrounding area and is seasonally inundated. Wetland boundary follows edge of depression.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. Acer rubrum	20	☑ 50.0%	FAC
2. Fraxinus pennsylvanica	20	☑ 50.0%	FACW
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	40	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. Ulmus rubra	10	☑ 100.0%	FAC
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	10	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. Glyceria striata	50	☑ 47.6%	OBL
2. Toxicodendron radicans	20	☐ 19.0%	FAC
3. Urtica dioica	25	☑ 23.8%	FACW
4. Impatiens capensis	10	☐ 9.5%	FACW
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
	105	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	50	x 1 =	50
FACW species	55	x 2 =	110
FAC species	50	x 3 =	150
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	155 (A)		310 (B)

Prevalence Index = B/A = 2.000

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is > 50%
- ☑ 3 - Prevalence Index is ≤3.0 [1]
- ☐ 4 - Morphological Adaptations [1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation [1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ◉ **No** ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-005 PFO**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR	4/2	80	10YR	4/6	20	C	M,PL	Silty Clay Loam	10% oxidized rhizospheres

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? **Yes** ◉ **No** ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☑ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? **Yes** ◉ **No** ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

The source of hydrology is surface runoff and seasonal flooding.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Licking | Sampling Date: 15-Jun-23

Applicant/Owner: AEP | State: OH | Sampling Point: W-MRK-004-005 UPL

Investigator(s): MRK, AJH | Section, Township, Range: S | T 3N | R 15W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): flat

Slope: 1.0% / 0.6 ° | Lat.: 40.147817 | Long.: -82.748294 | Datum: NAD83

Soil Map Unit Name: Centerburg silt loam, 2 to 6 percent slopes | NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	Is the Sampled Area within a Wetland? Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks:
Upland data point collected for W-MRK-004 and W-MRK-005. Upland data was collected within a forested area.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer rubrum	25	☑	35.7%	FAC
2. Fagus grandifolia	25	☑	35.7%	FACU
3. Quercus rubra	20	☑	28.6%	FACU
4.	0	☐	0.0%	
5.	0	☐	0.0%	0
	70	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)				
1. Lindera benzoin	10	☑	33.3%	FACW
2. Fagus grandifolia	10	☑	33.3%	FACU
3. Acer rubrum	10	☑	33.3%	FAC
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	30	= Total Cover		
Herb Stratum (Plot size: 5' radius)				
1. Parthenocissus quinquefolia	70	☑	70.0%	FACU
2. Toxicodendron radicans	20	☑	20.0%	FAC
3. Urtica dioica	10	☐	10.0%	FACW
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	100	= Total Cover		
Woody Vine Stratum (Plot size: 30' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	20	x 2 =	40
FAC species	55	x 3 =	165
FACU species	125	x 4 =	500
UPL species	0	x 5 =	0
Column Totals:	200 (A)		705 (B)

Prevalence Index = B/A = 3.525

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is > 50%
- ☐ 3 - Prevalence Index is ≤3.0 [1]
- ☐ 4 - Morphological Adaptations [1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation [1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-004-005 UPL**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-16	10YR 4/1	100					Clay Loam	

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? **Yes** ○ **No** ◉

Remarks:

No hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? **Yes** ○ **No** ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

No source of hydrology was observed.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Licking | Sampling Date: 16-Jun-23

Applicant/Owner: AEP | State: OH | Sampling Point: **W-MRK-006 PEM**

Investigator(s): MRK, AJH | Section, Township, Range: S | T 3N | R 15W

Landform (hillslope, terrace, etc.): Floodplain | Local relief (concave, convex, none): concave

Slope: 1.0% / 0.6 ° | Lat.: 40.128403 | Long.: -82.725013 | Datum: NAD83

Soil Map Unit Name: Pewamo silty clay loam, low carbonate till, 0 to 2 percent slopes | NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
This PEM wetland is located within a depression on the floodplain of a perennial watercourse. Wetland boundary follows edge of depression and is inundated seasonally. No vegetation within wetland due to inundation.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
	0	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	0 (A)		0 (B)

Prevalence Index = B/A = 0.000

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☐ **2 - Dominance Test is > 50%**
- ☑ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)
No vegetation within depression due to seasonal inundation.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-006 PEM**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR	3/1	75	10YR	3/6	25	C	PL	Silty Clay Loam	

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☑ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☑ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

The source of hydrology is seasonal flooding and surface runoff.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Licking | Sampling Date: 16-Jun-23

Applicant/Owner: AEP | State: OH | Sampling Point: **W-MRK-006-007 UPL**

Investigator(s): MRK, AJH | Section, Township, Range: S | T 3N | R 15W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): flat

Slope: 1.0% / 0.6 ° | Lat.: 40.128181 | Long.: -82.725055 | Datum: NAD83

Soil Map Unit Name: Bennington silt loam, 0 to 2 percent slopes | NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks:
Uupland data point for W-MRK-006 and W-MRK-007. Upland data was collected within a deciduous forest.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1. Acer rubrum	60	☑ 100.0%	FAC
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	60	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. Acer rubrum	20	☑ 66.7%	FAC
2. Rosa multiflora	10	☑ 33.3%	FACU
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	30	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. Parthenocissus quinquefolia	25	☑ 41.7%	FACU
2. Podophyllum peltatum	25	☑ 41.7%	FACU
3. Toxicodendron radicans	10	☐ 16.7%	FAC
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
	60	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 40.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	90	x 3 =	270
FACU species	60	x 4 =	240
UPL species	0	x 5 =	0
Column Totals:	150 (A)		510 (B)

Prevalence Index = B/A = 3.400

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☐ **2 - Dominance Test is > 50%**
- ☐ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-006-007 UPL**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-14	10YR 4/3	100					Silt Loam	
14-16	10YR 5/3	100					Silty Clay Loam	

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

No source of hydrology was observed.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Licking | Sampling Date: 16-Jun-23

Applicant/Owner: AEP | State: OH | Sampling Point: **W-MRK-007 PFO**

Investigator(s): MRK, AJH | Section, Township, Range: S [ ] T 3N R 15W

Landform (hillslope, terrace, etc.): Floodplain | Local relief (concave, convex, none): concave

Slope: 1.0% / 0.6 ° | Lat.: 40.1280789 | Long.: -82.7251133 | Datum: NAD83

Soil Map Unit Name: Bennington silt loam, 0 to 2 percent slopes | NWI classification: N/A

Are climatic/hydrologic conditions on the site typical for this time of year? Yes (•) No ( ) (If no, explain in Remarks.)

Are Vegetation [ ], Soil [ ], or Hydrology [ ] significantly disturbed? Are "Normal Circumstances" present? Yes (•) No ( )

Are Vegetation [ ], Soil [ ], or Hydrology [ ] naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes (•) No ( )	**Is the Sampled Area within a Wetland?** Yes (•) No ( )
Hydric Soil Present?	Yes (•) No ( )	
Wetland Hydrology Present?	Yes (•) No ( )	

Remarks:
This PFO wetland is located on the floodplain of a perennial and intermittent watercourse. Depression is seasonally inundated. Wetland boundary follows edge of depression.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer rubrum	30	☑	100.0%	FAC
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	30	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)				
1. Carpinus caroliniana	30	☑	75.0%	FAC
2. Lindera benzoin	10	☑	25.0%	FACW
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	40	= Total Cover		
Herb Stratum (Plot size: 5' radius)				
1. Impatiens capensis	50	☑	58.8%	FACW
2. Carex intumescens	25	☑	29.4%	FACW
3. Carex squarrosa	10	☐	11.8%	OBL
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	85	= Total Cover		
Woody Vine Stratum (Plot size: 30' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	85	x 2 =	170
FAC species	60	x 3 =	180
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	155 (A)		360 (B)

Prevalence Index = B/A = 2.323

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☑ **2 - Dominance Test is > 50%**
- ☑ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes (•) No ( )

Remarks: (Include photo numbers here or on a separate sheet.)
No vegetation within depression due to seasonal inundation.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-007 PFO**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR	4/1	75	10YR	3/6	25	C	PL	Silty Clay Loam	
14-16	10YR	5/1	75	10YR	5/8	25	C	PL	Silty Clay Loam	

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

The source of hydrology is seasonal flooding and surface runoff.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Delaware | Sampling Date: 22-Jun-23

Applicant/Owner: AEP | State: OH | Sampling Point: **W-MRK-011 PEM**

Investigator(s): MRK, RBL | Section, Township, Range: S | T 3N | R 16W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): concave

Slope: 1.0% / 0.6 ° | Lat.: 40.1870629 | Long.: -82.7767043 | Datum: NAD83

Soil Map Unit Name: Pewamo silty clay loam, 0 to 1 percent slopes | NWI classification: NA

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
This PEM wetland is located within a depression between a pasture and an agricultural field. Signs of tire ruts were observed throughout the wetland. Depression is collecting surface runoff from the agricultural field to the east.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	0	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	0	= Total Cover		
Herb Stratum (Plot size: 5' radius)				
1. Phalaris arundinacea	90	☑	72.0%	FACW
2. Apocynum cannabinum	20	☐	16.0%	FAC
3. Carex vulpinoidea	10	☐	8.0%	FACW
4. Scirpus atrovirens	5	☐	4.0%	OBL
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	125	= Total Cover		
Woody Vine Stratum (Plot size: 30' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	100	x 2 =	200
FAC species	20	x 3 =	60
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	125 (A)		265 (B)

Prevalence Index = B/A = 2.120

Hydrophytic Vegetation Indicators:

- ☑ **1 - Rapid Test for Hydrophytic Vegetation**
- ☑ **2 - Dominance Test is > 50%**
- ☑ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-011 PEM**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-16	10YR 4/2	90	10YR 4/6	10	C	PL	Silt Loam	

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

The source of hydrology is surface runoff.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Delaware | Sampling Date: 22-Jun-23

Applicant/Owner: AEP | State: OH | Sampling Point: **W-MRK-011 UPL**

Investigator(s): MRK, RBL | Section, Township, Range: S | T 3N | R 16W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): flat

Slope: 1.0% / 0.6 ° | Lat.: 40.187136 | Long.: -82.776454 | Datum: NAD83

Soil Map Unit Name: Pewamo silty clay loam, 0 to 1 percent slopes | NWI classification: NA

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks:
Upland data point for W-MRK-011. Upland data was collected within an agricultural field.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. Zea mays	100	☑ 100.0%	UPL
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	100	x 5 =	500
Column Totals:	100 (A)		500 (B)

Prevalence Index = B/A = 5.000

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☐ **2 - Dominance Test is > 50%**
- ☐ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)
Corn has been recently planted.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-011 UPL**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-16	10YR 5/3	90	10YR 4/6	10	C	M	Silty Clay Loam	

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No hydric soil indicators present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

No source of hydrology was observed.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Delaware | Sampling Date: 26-Jun-23

Applicant/Owner: AEP | State: OH | Sampling Point: **W-MRK-012 PFO**

Investigator(s): MRK, TW | Section, Township, Range: S | T 3N | R 16W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): concave

Slope: 1.0% / 0.6 ° | Lat.: 40.21583 | Long.: -82.813053 | Datum: NAD83

Soil Map Unit Name: Pewamo silty clay loam, 0 to 1 percent slopes | NWI classification: NA

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
This PFO wetland is located in a forested depression that is collecting surface runoff from the surrounding area. Depression is seasonally inundated.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. Acer saccharinum	50	☑ 100.0%	FACW
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	0
	50	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. Lindera benzoin	20	☑ 66.7%	FACW
2. Acer saccharinum	10	☑ 33.3%	FACW
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	30	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. Carex intumescens	30	☑ 37.5%	FACW
2. Arisaema triphyllum	20	☑ 25.0%	FACW
3. Toxicodendron radicans	20	☑ 25.0%	FAC
4. Impatiens capensis	10	☐ 12.5%	FACW
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
	80	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1. Toxicodendron radicans	10	☑ 100.0%	FAC
2.	0	☐ 0.0%	
	10	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 7 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	140	x 2 =	280
FAC species	30	x 3 =	90
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	170 (A)		370 (B)

Prevalence Index = B/A = 2.176

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☑ **2 - Dominance Test is > 50%**
- ☑ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)
Areas of sparse vegetation within the depression due to seasonal inundation.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-012 PFO**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/1	90	10YR 4/6	10	C	M,PL	Silt Loam	5% oxidized rhizospheres

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☑ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☑ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

The source of hydrology is seasonal flooding and surface runoff.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Delaware | Sampling Date: 26-Jun-23

Applicant/Owner: AEP | State: OH | Sampling Point: **W-MRK-012-013 UPL**

Investigator(s): MRK, TW | Section, Township, Range: S | T 3N | R 16W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): flat

Slope: 1.0% / 0.6 ° | Lat.: 40.215353 | Long.: -82.813401 | Datum: NAD83

Soil Map Unit Name: Pewamo silty clay loam, 0 to 1 percent slopes | NWI classification: NA

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks:
Upland data point collected for W-MRK-012 and W-MRK-013. Upland was collected within a agricultural field.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. Glycine max	75	☑ 100.0%	UPL
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
	75	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	75	x 5 =	375
Column Totals:	75 (A)		375 (B)

Prevalence Index = B/A = 5.000

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☐ **2 - Dominance Test is > 50%**
- ☐ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-012-013 UPL**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/3	100					Silty Clay Loam	
12-16	10YR 4/3	75	10YR 4/6	25	C	M	Silty Clay Loam	

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

No hydric soil indicators present

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

No source of hydrology was observed.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Delaware | Sampling Date: 26-Jun-23

Applicant/Owner: AEP | State: OH | Sampling Point: **W-MRK-013 PFO**

Investigator(s): MRK, TW | Section, Township, Range: S | T 3N | R 16W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): concave

Slope: 1.0% / 0.6 ° | Lat.: 40.213912 | Long.: -82.813384 | Datum: NAD83

Soil Map Unit Name: Pewamo silty clay loam, 0 to 1 percent slopes | NWI classification: PFO1C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
This PFO wetland is located in a forested depression that is collecting surface runoff from the surrounding area. Depression is seasonally inundated.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1. Acer saccharinum	70	☑ 100.0%	FACW
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	0
	70	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. Lindera benzoin	10	☑ 100.0%	FACW
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	10	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. Acer saccharinum	70	☑ 100.0%	FACW
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
	70	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1. Toxicodendron radicans	10	☑ 100.0%	FAC
2.	0	☐ 0.0%	
	10	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	150	x 2 =	300
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	160 (A)		330 (B)

Prevalence Index = B/A = 2.063

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☑ **2 - Dominance Test is > 50%**
- ☑ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)
Small silver maple saplings covering the ground surface. Areas of sparse vegetation within the depression due to seasonal inundation.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-013 PFO**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-16	7.5YR	2.5/1	90	10YR	4/6	10	C	M	Silty Clay Loam	

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☑ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ◉ No ○ Depth (inches): 4

Saturation Present? (includes capillary fringe) Yes ◉ No ○ Depth (inches): 2

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

The source of hydrology is seasonal flooding and surface runoff.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Licking | Sampling Date: 27-Jun-23

Applicant/Owner: AEP | State: OH | Sampling Point: **W-MRK-016 PEM**

Investigator(s): MRK, TW | Section, Township, Range: S | T 3N | R 15W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): concave

Slope: 1.0% / 0.6 ° | Lat.: 40.132939 | Long.: -82.745182 | Datum: NAD83

Soil Map Unit Name: Pe; Pewamo silty clay loam, low carbonate till, 0 to 2 percent slopes | NWI classification: PEM1C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
This PEM wetland is located in a depression at the edge of an agricultural field. Depression is collecting surface runoff which drains to the south. Wetland continues outside of the current study area.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	0
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. Typha angustifolia	25	☑ 20.0%	OBL
2. Phalaris arundinacea	50	☑ 40.0%	FACW
3. Persicaria pensylvanica	20	☐ 16.0%	FACW
4. Xanthium strumarium	30	☑ 24.0%	FAC
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
	125	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	70	x 2 =	140
FAC species	30	x 3 =	90
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	125 (A)		255 (B)

Prevalence Index = B/A = 2.040

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☑ **2 - Dominance Test is > 50%**
- ☑ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation extends into agricultural field.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-016 PEM**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/1	90	10YR 3/6	10	C	M,PL	Silt Loam	5% oxidized rhizospheres

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

The source of hydrology is seasonal flooding and surface runoff.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Licking | Sampling Date: 14-Sep-23

Applicant/Owner: AEP | State: OH | Sampling Point: **W-MRK-016 PFO**

Investigator(s): MRK, KRS | Section, Township, Range: S 25 T 3N R 15W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): concave

Slope: 1.0% / 0.6 ° | Lat.: 40.13284 | Long.: -82.74541 | Datum: NAD83

Soil Map Unit Name: Pe : Pewamo silty clay loam, low carbonate till, 0 to 2 percent slopes | NWI classification: PEM1C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
This PFO section of a PEM/PFO wetland complex is located in a depression that is collecting surface runoff. Water drains from the main section of the wetland which is PEM into the PFO edge. The wetland boundary follows edge of depression.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30' radius)				
1. Quercus palustris	40	☑	100.0%	FACW
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	40	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)				
1. Quercus palustris	5	☑	50.0%	FACW
2. Quercus macrocarpa	5	☑	50.0%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	10	= Total Cover		
Herb Stratum (Plot size: 5' radius)				
1. Phalaris arundinacea	30	☑	100.0%	FACW
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	30	= Total Cover		
Woody Vine Stratum (Plot size: 30' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	75	x 2 =	150
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	80 (A)		165 (B)

Prevalence Index = B/A = 2.063

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☑ **2 - Dominance Test is > 50%**
- ☑ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation indicators are present.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-016 PFO**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR 3/1	80	10YR 4/6	20	C	M,PL	Silty Clay Loam	10% oxidized rhizospheres

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Hydric soil indicator is present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

The source of hydrology is surface runoff. Several primary and secondary hydrology indicators are present.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Licking | Sampling Date: 27-Jun-23

Applicant/Owner: AEP | State: OH | Sampling Point: **W-MRK-016 UPL**

Investigator(s): MRK, TW | Section, Township, Range: S [ ] T 3N R 15W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): flat

Slope: 1.0% / 0.6 ° | Lat.: 40.133206 | Long.: -82.745064 | Datum: NAD83

Soil Map Unit Name: BeB; Bennington silt loam, 2 to 6 percent slopes | NWI classification: NA

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks:
Upland data point for W-MRK-016. Upland data was collected within an agricultural field.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. Glycine max	75	☑ 100.0%	UPL
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
	75	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	75	x 5 =	375
Column Totals:	75 (A)		375 (B)

Prevalence Index = B/A = 5.000

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☐ **2 - Dominance Test is > 50%**
- ☐ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)
Field is currently planted with soybean.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-016 UPL**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-10	10YR 3/3	100					Silt Loam	
10-16	10YR 5/3	100					Silt Loam	

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

No source of hydrology was observed.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Licking | Sampling Date: 27-Jun-23

Applicant/Owner: AEP | State: OH | Sampling Point: W-MRK-017 PFO

Investigator(s): MRK, TW | Section, Township, Range: S | T 3N | R 15W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): flat

Slope: 1.0% / 0.6 ° | Lat.: 40.140428 | Long.: -82.749103 | Datum: NAD83

Soil Map Unit Name: BeB: Bennington silt loam, 2 to 6 percent slopes | NWI classification: PFO1C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	Is the Sampled Area within a Wetland? **Yes** ◉ **No** ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
This PFO wetland is located within a forested depression that is collecting surface runoff. Wetland is seasonally inundated with water based on water stained leaves and debris drift deposits.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer saccharinum	25	☑	50.0%	FACW
2. Quercus bicolor	25	☑	50.0%	FACW
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	50	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)				
1. Ulmus rubra	10	☑	100.0%	FAC
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	10	= Total Cover		
Herb Stratum (Plot size: 5' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	0	= Total Cover		
Woody Vine Stratum (Plot size: 30' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	50	x 2 =	100
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	60 (A)		130 (B)

Prevalence Index = B/A = 2.167

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is > 50%
- ☑ 3 - Prevalence Index is ≤3.0 [1]
- ☐ 4 - Morphological Adaptations [1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation [1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ◉ **No** ○

Remarks: (Include photo numbers here or on a separate sheet.)

Sparse herb stratum due to seasonal inundation.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-017 PFO**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR	3/1	75	10YR	4/6	25	C	M,PL	Silty Clay Loam	10% oxidized rhizospheres

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ◉ **No** ○

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☑ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☑ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☑ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? **Yes** ◉ **No** ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

The source of hydrology is seasonal flooding and surface runoff.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel City/County: Licking Sampling Date: 27-Jun-23

Applicant/Owner: AEP State: OH Sampling Point: W-MRK-017-018 UPL

Investigator(s): MRK, TW Section, Township, Range: S T 3N R 15W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): flat

Slope: 1.0% / 0.6 ° Lat.: 40.14077 Long.: -82.748993 Datum: NAD83

Soil Map Unit Name: BeB: Bennington silt loam, 2 to 6 percent slopes NWI classification: NA

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	Is the Sampled Area within a Wetland? Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks:
Upland data point for W-MRK-017 and W-MRK-018. Upland data was collected within an agricultural field.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	0		= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	0		= Total Cover	
Herb Stratum (Plot size: 5' radius)				
1. Zea mays	100	☑	100.0%	UPL
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	100		= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
	0		= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	100	x 5 =	500
Column Totals:	100 (A)		500 (B)

Prevalence Index = B/A = 5.000

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is > 50%
- ☐ 3 - Prevalence Index is ≤3.0 [1]
- ☐ 4 - Morphological Adaptations [1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation [1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)
Field is currently planted with corn.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-017-018 UPL**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR	5/3	100						Silty Clay Loam	
12-16	10YR	5/4	100						Silty Clay Loam	

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ○ **No** ◉

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? **Yes** ○ **No** ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

No source of hydrology was observed.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Delaware | Sampling Date: 12-Sep-23

Applicant/Owner: AEP | State: OH | Sampling Point: **W-MRK-020 PFO**

Investigator(s): MRK, KRS | Section, Township, Range: S | T 4N | R 16W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): concave

Slope: 1.0% / 0.6 ° | Lat.: 40.22163 | Long.: -82.81790 | Datum: NAD83

Soil Map Unit Name: PwA : Pewamo silty clay loam, 0 to 1 percent slopes | NWI classification: None

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
This PFO section of a PSS/PFO wetland complex is located within a depression adjacent to the existing transmission line right-of-way. Surface water runoff drains off the ROW and into a forested area. Wetland boundary follows edge of depression.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30' radius)				
1. Acer saccharinum	35	☑	58.3%	FACW
2. Acer rubrum	25	☑	41.7%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	0
	60	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)				
1. Acer rubrum	10	☑	50.0%	FAC
2. Ulmus rubra	10	☑	50.0%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	20	= Total Cover		
Herb Stratum (Plot size: 5' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	0	= Total Cover		
Woody Vine Stratum (Plot size: 30' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	35	x 2 =	70
FAC species	45	x 3 =	135
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	80 (A)		205 (B)

Prevalence Index = B/A = 2.563

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☑ **2 - Dominance Test is > 50%**
- ☑ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation indicators are present.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-020 PFO**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-16	2.5Y	2.5/1	90	10YR	3/6	10	C	PL	Silty Clay Loam	

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Hydric soil indicator is present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☑ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

The source of hydrology is surface runoff. Several primary and secondary hydrology indicators are present.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Delaware | Sampling Date: 12-Sep-23

Applicant/Owner: AEP | State: OH | Sampling Point: **W-MRK-020 PSS**

Investigator(s): MRK, KRS | Section, Township, Range: S | T 4N | R 16W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): concave

Slope: 1.0% / 0.6 ° | Lat.: 40.22187 | Long.: -82.81892 | Datum: NAD83

Soil Map Unit Name: BeA : Bennington silt loam, 0 to 2 percent slopes | NWI classification:

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
This PSS section of a PSS/PFO wetland complex is located within a depression on the existing transmission line right-of-way. Surface water runoff drains off the ROW and into a forested area. Wetland boundary follows edge of depression.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	0
	0	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)				
1. Cornus amomum	25	☑	38.5%	FACW
2. Acer saccharinum	25	☑	38.5%	FACW
3. Rubus allegheniensis	10	☐	15.4%	FACU
4. Salix nigra	5	☐	7.7%	OBL
5.	0	☐	0.0%	
	65	= Total Cover		
Herb Stratum (Plot size: 5' radius)				
1. Agrimonia parviflora	50	☑	34.5%	FACW
2. Solidago canadensis	30	☑	20.7%	FACU
3. Juncus effusus	25	☐	17.2%	OBL
4. Dichanthelium clandestinum	20	☐	13.8%	FACW
5. Impatiens capensis	10	☐	6.9%	FACW
6. Scirpus cyperinus	10	☐	6.9%	OBL
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	145	= Total Cover		
Woody Vine Stratum (Plot size: 30' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	40	x 1 =	40
FACW species	130	x 2 =	260
FAC species	0	x 3 =	0
FACU species	40	x 4 =	160
UPL species	0	x 5 =	0
Column Totals:	210 (A)		460 (B)

Prevalence Index = B/A = 2.190

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☑ **2 - Dominance Test is > 50%**
- ☑ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation indicators are present.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-020 PSS**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR	4/2	80	10YR	5/6	20	C	M,PL	Silty Clay Loam	10% oxidized rhizospheres

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Hydric soil indicator is present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

The source of hydrology is surface runoff. Several secondary and primary hydrology indicators are present.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Delaware | Sampling Date: 12-Sep-23

Applicant/Owner: AEP | State: OH | Sampling Point: **W-MRK-020 UPL**

Investigator(s): MRK, KRS | Section, Township, Range: S | T 4N | R 16W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): flat

Slope: 1.0% / 0.6 ° | Lat.: 40.22173 | Long.: -82.82000 | Datum: NAD83

Soil Map Unit Name: BeA : Bennington silt loam, 0 to 2 percent slopes | NWI classification: NA

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks:
Upland data point for W-MRK-020. Upland data was collected between a forested area and agricultural field.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30' radius)				
1. Quercus rubra	20	☑	66.7%	FACU
2. Quercus macrocarpa	10	☑	33.3%	FAC
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	0
	30	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	0	= Total Cover		
Herb Stratum (Plot size: 5' radius)				
1. Zea mays	50	☑	100.0%	UPL
2.		☑	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	50	= Total Cover		
Woody Vine Stratum (Plot size: 30' radius)				
1. Toxicodendron radicans	50	☐	100.0%	FAC
2.	0	☐	0.0%	
	50	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	60	x 3 =	180
FACU species	20	x 4 =	80
UPL species	50	x 5 =	250
Column Totals:	130 (A)		510 (B)

Prevalence Index = B/A = 3.923

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☐ **2 - Dominance Test is > 50%**
- ☐ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation indicators are not present.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-020 UPL**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-16	2.5Y 5/2	100					Silt Loam	

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Hydric soil indicators are not present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

No source of hydrology was observed. No hydrology indicators are present.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Delaware | Sampling Date: 11-Sep-23

Applicant/Owner: AEP | State: OH | Sampling Point: **W-MRK-022 PEM**

Investigator(s): MRK, KRS | Section, Township, Range: S | T 4N | R 16W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): concave

Slope: 1.0% / 0.6 ° | Lat.: 40.22407 | Long.: -82.84601 | Datum: NAD83

Soil Map Unit Name: PwA : Pewamo silty clay loam, 0 to 1 percent slopes | NWI classification: None

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
This PEM wetland is located within a depression on the existing transmission line right-of-way. Depression is receiving surface runoff from the surrounding are and is also seasonally flooded by a watercourse.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. Phalaris arundinacea	100	☑ 100.0%	FACW
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
	100	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	100 (A)		200 (B)

Prevalence Index = B/A = 2.000

Hydrophytic Vegetation Indicators:

- ☑ **1 - Rapid Test for Hydrophytic Vegetation**
- ☑ **2 - Dominance Test is > 50%**
- ☑ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation indicators are present.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-022 PEM**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR	3/2	80	7.5YR	4/4	20	C	PL	Silty Clay Loam	

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Hydric soil indicator is present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

The source of hydrology is seasonal flooding and surface runoff. Hydrology indicators are present.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Delaware | Sampling Date: 11-Sep-23

Applicant/Owner: AEP | State: OH | Sampling Point: **W-MRK-022 UPL**

Investigator(s): MRK, KRS | Section, Township, Range: S | T 4N | R 16W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): concave

Slope: 1.0% / 0.6 ° | Lat.: 40.22423 | Long.: -82.84698 | Datum: NAD83

Soil Map Unit Name: PwA : Pewamo silty clay loam, 0 to 1 percent slopes | NWI classification: PEM1C

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks:
Upland data point for W-MRK-022. Upland data was collected within an area dominated by Phalaris arundinacea, but hydrology and hydric soils are absent.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	0	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	0	= Total Cover		
Herb Stratum (Plot size: 5' radius)				
1. Phalaris arundinacea	100	☑	76.9%	FACW
2. Cirsium arvense	20	☐	15.4%	FACU
3. Phytolacca americana	10	☐	7.7%	FACU
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	130	= Total Cover		
Woody Vine Stratum (Plot size: 30' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	100	x 2 =	200
FAC species	0	x 3 =	0
FACU species	30	x 4 =	120
UPL species	0	x 5 =	0
Column Totals:	130 (A)		320 (B)

Prevalence Index = B/A = 2.462

Hydrophytic Vegetation Indicators:

- ☑ **1 - Rapid Test for Hydrophytic Vegetation**
- ☑ **2 - Dominance Test is > 50%**
- ☐ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation indicators are present.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-022 UPL**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Redox Features Type[1]	Redox Features Loc[2]	Texture	Remarks
0-16	10YR 3/2	100					Silt Loam	

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Hydric soil indicators are not present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

No source of hydrology was observed. One secondary hydrology indicator was present, criteria not met.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Licking | Sampling Date: 13-Sep-23

Applicant/Owner: AEP | State: OH | Sampling Point: W-MRK-030 PEM

Investigator(s): MRK, KRS | Section, Township, Range: S 15 T 3N R 15W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): concave

Slope: 1.0% / 0.6 ° | Lat.: 40.16174 | Long.: -82.74871 | Datum: NAD83

Soil Map Unit Name: Pe : Pewamo silty clay loam, low carbonate till, 0 to 2 percent slopes | NWI classification: None

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	Is the Sampled Area within a Wetland? **Yes** ◉ **No** ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
This PEM section of a PEM/PFO wetland complex is located in a depression between two separate PFO sections. Surface runoff drains out of the PFO section to the south, flows into the PEM, and flows north into another PFO section.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. Scirpus atrovirens	50	☑ 33.3%	OBL
2. Scirpus cyperinus	15	☐ 10.0%	OBL
3. Impatiens capensis	15	☐ 10.0%	FACW
4. Eupatorium perfoliatum	25	☑ 16.7%	OBL
5. Ambrosia artemisiifolia	20	☑ 13.3%	FACU
6. Persicaria sagittata	10	☐ 6.7%	OBL
7. Juncus effusus	10	☐ 6.7%	OBL
8. Phalaris arundinacea	5	☐ 3.3%	FACW
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
	150	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	110	x 1 =	110
FACW species	20	x 2 =	40
FAC species	0	x 3 =	0
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	150 (A)		230 (B)

Prevalence Index = B/A = 1.533

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is > 50%
- ☑ 3 - Prevalence Index is ≤3.0 [1]
- ☐ 4 - Morphological Adaptations [1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation [1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ◉ **No** ○

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation indicators are present.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-030 PEM**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR	2/1	80	10YR	3/6	20	C	M,PL	Silty Clay Loam	5% oxidized rhizospheres

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? **Yes** ◉ **No** ○

Remarks:

Hydric soil indicator is present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? **Yes** ◉ **No** ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

The source of hydrology is surface runoff. Primary and secondary hydrology indicators present.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Licking | Sampling Date: 13-Sep-23

Applicant/Owner: AEP | State: OH | Sampling Point: W-MRK-030 PFO

Investigator(s): MRK, KRS | Section, Township, Range: S 15 T 3N R 15W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): concave

Slope: 1.0% / 0.6 ° | Lat.: 40.16161 | Long.: -82.74894 | Datum: NAD83

Soil Map Unit Name: Pe : Pewamo silty clay loam, low carbonate till, 0 to 2 percent slopes | NWI classification: None

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	Is the Sampled Area within a Wetland? **Yes** ◉ **No** ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
This PFO section of a PEM/PFO wetland complex is located in a depression surrounding a PEM section. Surface runoff drains out of the PFO section to the south, flows into the PEM, and flows north into another PFO section.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1. Acer rubrum	30	☑	50.0%	FAC
2. Acer saccharinum	30	☑	50.0%	FACW
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	60	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)				
1. Ulmus rubra	25	☑	45.5%	FAC
2. Acer rubrum	25	☑	45.5%	FAC
3. Lindera benzoin	5	☐	9.1%	FACW
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	55	= Total Cover		
Herb Stratum (Plot size: 5' radius)				
1. Toxicodendron radicans	50	☑	55.6%	FAC
2. Urtica dioica	5	☐	5.6%	FACW
3. Impatiens capensis	15	☐	16.7%	FACW
4. Carex intumescens	20	☑	22.2%	FACW
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	90	= Total Cover		
Woody Vine Stratum (Plot size: 30' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 6 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	75	x 2 =	150
FAC species	130	x 3 =	390
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	205 (A)		540 (B)

Prevalence Index = B/A = 2.634

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is > 50%
- ☑ 3 - Prevalence Index is ≤3.0 [1]
- ☐ 4 - Morphological Adaptations [1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation [1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ◉ **No** ○

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation indicators are present.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-030 PFO**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR	2/1	80	10YR	3/6	20	C	M,PL	Silty Clay Loam	5% oxidized rhizospheres

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ◉ **No** ○

Remarks:

Hydric soil indicator is present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? **Yes** ◉ **No** ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

The source of hydrology is surface runoff.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Licking | Sampling Date: 13-Sep-23

Applicant/Owner: AEP | State: OH | Sampling Point: W-MRK-030 UPL

Investigator(s): MRK, KRS | Section, Township, Range: S 15 T 3N R 15W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): flat

Slope: 1.0% / 0.6 ° | Lat.: 40.16054 | Long.: -82.74862 | Datum: NAD83

Soil Map Unit Name: Pe : Pewamo silty clay loam, low carbonate till, 0 to 2 percent slopes | NWI classification: None

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ◉

Are Vegetation ☐ , Soil ☑ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	Is the Sampled Area within a Wetland? Yes ○ No ◉
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks:
Upland data point for W-MRK-030. Upland data was collected within an agriculotural field next to the forest edge.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. Zea mays	100	☑ 83.3%	UPL
2. Xanthium strumarium	10	☐ 8.3%	FAC
3. Cyperus esculentus	10	☐ 8.3%	FACW
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
	120	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	10	x 3 =	30
FACU species	0	x 4 =	0
UPL species	100	x 5 =	500
Column Totals:	120 (A)		550 (B)

Prevalence Index = B/A = 4.583

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is > 50%
- ☐ 3 - Prevalence Index is ≤3.0 [1]
- ☐ 4 - Morphological Adaptations [1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation [1] (Explain)

[1] Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation indicators are not present.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-030 UPL**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR	5/1	35							
	10YR	4/1	35	10YR	5/8	30	C	M	Silty Clay Loam	25% mixed rock

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? **Yes** ◉ **No** ○

Remarks:

Soils are mixed due to agricultural practices. Hydric soil indicator is present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☑ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? **Yes** ○ **No** ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

No source of hydrology was observed, agricultural field is likely wet during a short period in the wet season. One secondary hydrology indicator present, criteria not met.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Licking | Sampling Date: 15-Sep-23

Applicant/Owner: AEP | State: OH | Sampling Point: **W-MRK-034 PEM**

Investigator(s): MRK, KRS | Section, Township, Range: S 24 T 3N R 15W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): concave

Slope: 1.0% / 0.6 ° | Lat.: 40.12834 | Long.: -82.73116 | Datum: NAD83

Soil Map Unit Name: Pe : Pewamo silty clay loam, low carbonate till, 0 to 2 percent slopes | NWI classification: None

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
This PEM wetland is located in a small depression at the edge of an agricultural field. A pond located just outside of the study area may have a leaking berm that contributes to the hydrology. The wetland boundary follows edge of depression.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1. Salix nigra	2	☐ 100.0%	OBL
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	0
	2	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. Cyperus esculentus	50	☑ 31.3%	FACW
2. Impatiens capensis	50	☑ 31.3%	FACW
3. Epilobium coloratum	20	☐ 12.5%	OBL
4. Phalaris arundinacea	15	☐ 9.4%	FACW
5. Carex lurida	10	☐ 6.3%	OBL
6. Echinochloa crusgalli	10	☐ 6.3%	FACU
7. Rumex crispus	5	☐ 3.1%	FAC
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
	160	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	32	x 1 =	32
FACW species	115	x 2 =	230
FAC species	5	x 3 =	15
FACU species	10	x 4 =	40
UPL species	0	x 5 =	0
Column Totals:	162 (A)		317 (B)

Prevalence Index = B/A = 1.957

Hydrophytic Vegetation Indicators:

- ☑ **1 - Rapid Test for Hydrophytic Vegetation**
- ☑ **2 - Dominance Test is > 50%**
- ☑ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation indicators are present.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-034 PEM**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR	3/1	90	7.5YR	4/6	10	C	PL	Silty Clay Loam	

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☑ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks:

Hydric soil indicator is present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

The source of hydrology is surface runoff and seeps from a pond berm. Several primary and secondary hydrology indicators are present.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Licking | Sampling Date: 15-Sep-23

Applicant/Owner: AEP | State: OH | Sampling Point: **W-MRK-034 UPL**

Investigator(s): MRK, KRS | Section, Township, Range: S 24 T 3N R 15W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): flat

Slope: 1.0% / 0.6 ° | Lat.: 40.12841 | Long.: -82.73109 | Datum: NAD83

Soil Map Unit Name: Pe : Pewamo silty clay loam, low carbonate till, 0 to 2 percent slopes | NWI classification: NA

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks:
Upland data point for W-MRK-034. Upland data was collected within an agricultural field.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	0	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	0	= Total Cover		
Herb Stratum (Plot size: 5' radius)				
1. Glycine max	100	☑	80.0%	UPL
2. Glechoma hederacea	25	☑	20.0%	FACU
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	125	= Total Cover		
Woody Vine Stratum (Plot size: 30' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	25	x 4 =	100
UPL species	100	x 5 =	500
Column Totals:	125	(A)	600 (B)

Prevalence Index = B/A = 4.800

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☐ **2 - Dominance Test is > 50%**
- ☐ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation indicators are absent.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-034 UPL**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR	3/2	50	10YR	3/6	50			Silt Loam	

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ○ No ◉

Remarks:

Hydric soil indicators are absent.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

No source of hydrology was observed. No hydrology indicators are present.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel City/County: Delaware Sampling Date: 26-Sep-23

Applicant/Owner: AEP State: OH Sampling Point: **W-MRK-035 PFO**

Investigator(s): MRK, KRS Section, Township, Range: S T 3N R 16W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): concave

Slope: 1.0% / 0.6 ° Lat.: 40.19245 Long.: -82.78172 Datum: NAD83

Soil Map Unit Name: PwA : Pewamo silty clay loam, 0 to 1 percent slopes NWI classification: None

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
This PFO wetland is located within a forested depression that is collecting surface runoff from the surrounding area. Water drains to an agricultural swale outside of the study area. The wetland boundary follows edge of depression.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
1. Acer rubrum	25	☑ 50.0%	FAC
2. Acer saccharinum	25	☑ 50.0%	FACW
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	50	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. Carya ovata	10	☑ 50.0%	FACU
2. Lindera benzoin	10	☑ 50.0%	FACW
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	20	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. Toxicodendron radicans	40	☑ 80.0%	FAC
2. Parthenocissus quinquefolia	10	☑ 20.0%	FACU
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
	50	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 6 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	35	x 2 =	70
FAC species	65	x 3 =	195
FACU species	20	x 4 =	80
UPL species	0	x 5 =	0
Column Totals:	120 (A)		345 (B)

Prevalence Index = B/A = 2.875

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☑ **2 - Dominance Test is > 50%**
- ☑ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation indicators are present.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-035 PFO**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-16	10YR	4/1	80	10YR	3/6	20	C	M,PL	Silt Loam	10% oxidized rhizospheres

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Hydric soil indicator is present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☑ Sparsely Vegetated Concave Surface (B8)
- ☑ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☑ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches): _____

Water Table Present? Yes ○ No ◉ Depth (inches): _____

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches): _____

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

The source of hydrology is surface runoff. Several primary and secondary hydrology indicators are present.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel City/County: Delaware Sampling Date: 26-Sep-23

Applicant/Owner: AEP State: OH Sampling Point: **W-MRK-035 UPL**

Investigator(s): MRK, KRS Section, Township, Range: S T 3N R 16W

Landform (hillslope, terrace, etc.): Flat Local relief (concave, convex, none): flat

Slope: 1.0% / 0.6 ° Lat.: 40.192265 Long.: -82.781877 Datum: NAD83

Soil Map Unit Name: BeA : Bennington silt loam, 0 to 2 percent slopes NWI classification: None

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☑ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ◉

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○ No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Hydric Soil Present?	Yes ○ No ◉	
Wetland Hydrology Present?	Yes ○ No ◉	

Remarks:
Upland data point for W-MRK-035. Upland data was collected within an agricultural field.

VEGETATION - Use scientific names of plants.

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Rel.Strat. Cover	Indicator Status
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	0	= Total Cover		
Sapling/Shrub Stratum (Plot size: 15' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
3.	0	☐	0.0%	
4.	0	☐	0.0%	
5.	0	☐	0.0%	
	0	= Total Cover		
Herb Stratum (Plot size: 5' radius)				
1. Zea mays	100	☑	83.3%	UPL
2. Setaria pumila	10	☐	8.3%	FAC
3. Toxicodendron radicans	10	☐	8.3%	FAC
4.	0	☐	0.0%	
5.	0	☐	0.0%	
6.	0	☐	0.0%	
7.	0	☐	0.0%	
8.	0	☐	0.0%	
9.	0	☐	0.0%	
10.	0	☐	0.0%	
	120	= Total Cover		
Woody Vine Stratum (Plot size: 30' radius)				
1.	0	☐	0.0%	
2.	0	☐	0.0%	
	0	= Total Cover		

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	20	x 3 =	60
FACU species	0	x 4 =	0
UPL species	100	x 5 =	500
Column Totals:	120 (A)		560 (B)

Prevalence Index = B/A = 4.667

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☐ **2 - Dominance Test is > 50%**
- ☐ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ○ No ◉

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation indicators are absent.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **W-MRK-035 UPL**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 5/2	100					Silt Loam	

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes ○ No ◉

Remarks:

Shovel refusal at 12 inches due to soils compacted by agricultural activity. Hydric soil indicators are absent.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ◉ Depth (inches):

Water Table Present? Yes ○ No ◉ Depth (inches):

Saturation Present? (includes capillary fringe) Yes ○ No ◉ Depth (inches):

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

No source of hydrology was observed. Hydrology indicators are absent.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Licking | Sampling Date: 15-Sep-23

Applicant/Owner: AEP | State: OH | Sampling Point: **Pond-MRK-003**

Investigator(s): MRK, KRS | Section, Township, Range: S 23 T 3N R 15W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): concave

Slope: 1.0% / 0.6 ° | Lat.: 40.12477 | Long.: -82.71945 | Datum: NAD83

Soil Map Unit Name: Pe : Pewamo silty clay loam, low carbonate till, 0 to 2 percent slopes | NWI classification: PUBGx

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
This open water pond is located within a residential property. Pond collects surface runoff. Pond water level is extremely low currently due to seasonal conditions.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. Typha angustifolia	25	☑ 62.5%	OBL
2. Phalaris arundinacea	15	☑ 37.5%	FACW
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
	40	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	25	x 1 =	25
FACW species	15	x 2 =	30
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	40 (A)		55 (B)

Prevalence Index = B/A = 1.375

Hydrophytic Vegetation Indicators:

- ☑ **1 - Rapid Test for Hydrophytic Vegetation**
- ☑ **2 - Dominance Test is > 50%**
- ☑ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation is scattered throughout areas of the pond that are now seasonally dry.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **Pond-MRK-003**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)		%	Redox Features Color (moist)		%	Type[1]	Loc[2]	Texture	Remarks
0-16	2.5Y	4/1	80	10YR	4/6	20	C	M	Silty Clay Loam	

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type:

Depth (inches):

Hydric Soil Present? Yes ◉ No ○

Remarks:

Hydric soil indicator is present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☑ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☑ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☑ Inundation Visible on Aerial Imagery (B7)
- ☑ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☑ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◉	No ○	Depth (inches):	12
Water Table Present?	Yes ◉	No ○	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes ◉	No ○	Depth (inches):	0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

The source of hydrology is surface runoff. Several primary and secondary hydrology indicators are present.

WETLAND DETERMINATION DATA FORM - Midwest Region

Project/Site: Vassell-Green Chapel | City/County: Licking | Sampling Date: 15-Sep-23

Applicant/Owner: AEP | State: OH | Sampling Point: **Pond-MRK-004**

Investigator(s): MRK, KRS | Section, Township, Range: S 24 T 3N R 15W

Landform (hillslope, terrace, etc.): Flat | Local relief (concave, convex, none): concave

Slope: 1.0% / 0.6 ° | Lat.: 40.12768 | Long.: -82.72389 | Datum: NAD83

Soil Map Unit Name: BeA : Bennington silt loam, 0 to 2 percent slopes | NWI classification:

Are climatic/hydrologic conditions on the site typical for this time of year? Yes ◉ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ◉ No ○

Are Vegetation ☐ , Soil ☐ , or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉ No ○	**Is the Sampled Area within a Wetland?** Yes ◉ No ○
Hydric Soil Present?	Yes ◉ No ○	
Wetland Hydrology Present?	Yes ◉ No ○	

Remarks:
This open water pond is located within a residential property. Pond collects surface runoff and water from spring seeps.

VEGETATION - Use scientific names of plants.

	Absolute % Cover	Dominant Species? Rel.Strat. Cover	Indicator Status
Tree Stratum (Plot size: 30' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	0	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. Salix nigra	5	☑ 100.0%	OBL
2.	0	☐ 0.0%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
	5	= Total Cover	
Herb Stratum (Plot size: 5' radius)			
1.	25	☑ 62.5%	
2.	15	☑ 37.5%	
3.	0	☐ 0.0%	
4.	0	☐ 0.0%	
5.	0	☐ 0.0%	
6.	0	☐ 0.0%	
7.	0	☐ 0.0%	
8.	0	☐ 0.0%	
9.	0	☐ 0.0%	
10.	0	☐ 0.0%	
	40	= Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1.	0	☐ 0.0%	
2.	0	☐ 0.0%	
	0	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of dominant Species That Are OBL, FACW, or FAC: 33.3% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	5 (A)		5 (B)

Prevalence Index = B/A = 1.000

Hydrophytic Vegetation Indicators:

- ☐ **1 - Rapid Test for Hydrophytic Vegetation**
- ☐ **2 - Dominance Test is > 50%**
- ☑ **3 - Prevalence Index is ≤3.0** [1]
- ☐ **4 - Morphological Adaptations** [1] **(Provide supporting data in Remarks or on a separate sheet)**
- ☐ **Problematic Hydrophytic Vegetation** [1] **(Explain)**

[1] **Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.**

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: (Include photo numbers here or on a separate sheet.)
Hydrophytic vegetation is limited to the pond edge. Area is mowed around the pond.

*Indicator suffix = National status or professional decision assigned because Regional status not defined by FWS.

SOIL

Sampling Point: **Pond-MRK-004**

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks

[1] Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2] Location: PL=Pore Lining. M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Muck Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils [3]:

- ☐ Coast Prairie Redox (A16)
- ☐ Dark Surface (S7)
- ☐ Iron Manganese Masses (F12)
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3] Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes ◉ No ○

Remarks:

Soil pit was not sampled due to deep surface water. Hydric soils are assumed due to year round inundation.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☑ Surface Water (A1)
- ☑ High Water Table (A2)
- ☑ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☑ Inundation Visible on Aerial Imagery (B7)
- ☑ Sparsely Vegetated Concave Surface (B8)
- ☐ Water-Stained Leaves (B9)
- ☑ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☑ Geomorphic Position (D2)
- ☑ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ◉ No ○ Depth (inches): 72

Water Table Present? Yes ◉ No ○ Depth (inches): 0

Saturation Present? (includes capillary fringe) Yes ◉ No ○ Depth (inches): 0

Wetland Hydrology Present? Yes ◉ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

NA

Remarks:

The source of hydrology is surface runoff and spring seeps. Several primary and secondary hydrology indicators are present.

Version 5.0	**Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization**
	Background Information Scoring **Boundary Worksheet Narrative Rating** **Field Form Quantitative Rating** **ORAM Summary Worksheet** **Wetland Categorization Worksheet** Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland may be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To properly answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx

Background Information	
Name:	**Cameron Wyse**
Date:	**6/7/2023**
Affiliation:	**AECOM**
Address:	**525 Vine St., Ste. 1800, Cincinnati, OH 45202**
Phone Number:	**(859) 227-5211**
e-mail address:	Cameron.Wyse@AECOM.com
Name of Wetland:	**W-CRW-001**
Vegetation Communit(ies):	**PEM**
HGM Class(es):	**Deppressional**

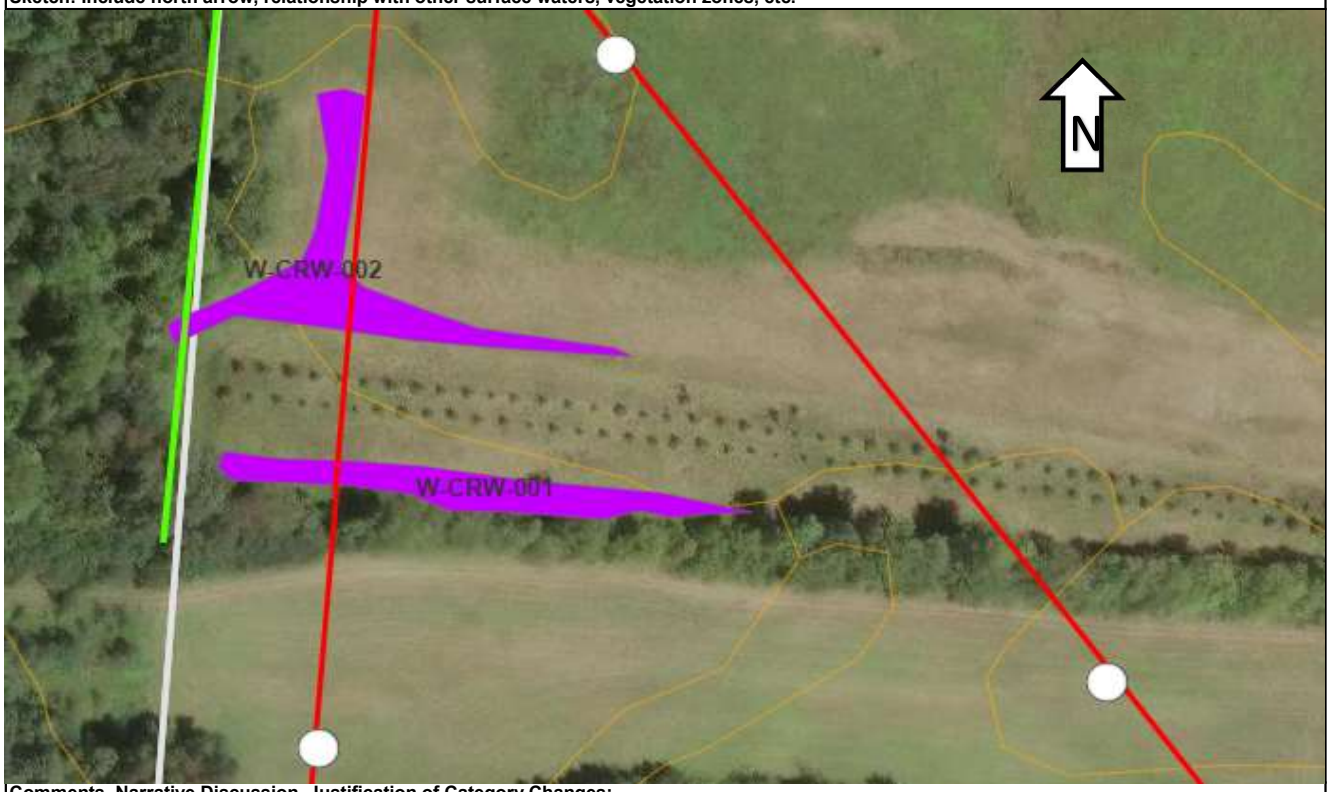
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.



Lat/Long or UTM Coordinate:	**40.225059, -82.850404**
USGS Quad Name:	**Sunbury**
County:	**Deleware**
Township:	**Trenton**
Section and Subsection:	**4N 16W**
Hydrologic Unit Code:	**50600011306**
Site Visit:	**6/7/2023**
National Wetland Inventory Map:	**See Figure 2**
Ohio Wetland Inventory Map:	**N/A**
Soil Survey:	**See Figure 2**
Delineation report/map:	**See Figure 3**

Name of Wetland:	W-CRW-001		
Wetland Size (delineated acres):	0.21	Wetland Size (Estimated total acres):	0.21

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.



Comments, Narrative Discussion, Justification of Category Changes:

PEM wetlands on either side of constructed berm. Delineated by topo and veg. Hydro source=precip

Final score:	29	Category:	1

Wetland ID:	W-CRW-001

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. Areas with a high degree of hydrologic interaction should be scored as a single wetland. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human- induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		X
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		X

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Wetland ID:	W-CRW-001

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature and by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	***NO** Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	***NO** Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	***NO** Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	***NO** Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis* , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	***NO** Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	***NO** Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	***NO** Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	***NO** Go to Question 8b

Wetland ID:	W-CRW-001

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	*NO Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	*NO Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	*NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	*NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	*NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	*NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	*NO Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	*NO Complete Quantitative Rating

Wetland ID:	W-CRW-001

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	oak opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Wetland ID:	W-CRW-001

Site:	Vassell-Green Chapel	Rater(s):	CRW, RBL	Date:	6/7/2023

Field ID:

W-CRW-001

Delineated acres:	0.21
Total acres:	0.21

Metric 1. Wetland Area (size).

1.0 / 1.0 (max 6 pts / subtotal)

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [ ] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [x] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

7.0 / 8.0 (max 14 pts. / subtotal)

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [x] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [ ] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [ ] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [x] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [ ] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

6.0 / 14.0 (max 30 pts. / subtotal)

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [ ] Part of wetland/upland (e.g. forest), complex (1)
- [ ] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select one.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [ ] Regularly inundated/saturated (3)
- [ ] Seasonally inundated (2)
- [x] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [ ] Recovered (7)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] ditch
- [ ] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [x] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] Other:

Metric 4. Habitat Alteration and Development.

10.0 / 24.0 (max 20 pts. / subtotal)

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [x] Recovered (3)
- [ ] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [x] Moderately good (4)
- [ ] Fair (3)
- [ ] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [ ] Recovered (6)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [x] mowing
- [ ] grazing
- [ ] clearcutting
- [ ] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [x] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [ ] sedimentation
- [ ] dredging
- [ ] farming
- [ ] nutrient enrichment

24.0 (subtotal this page)

ORAM v. 5.0 Field Form Quantitative Rating

Wetland ID:	W-CRW-001

Site:	Vassell-Green Chapel	Rater(s):	CRW, RBL	Date:	6/7/2023

Field ID:
W-CRW-001

24.0
subtotal this page

0.0 max 10 pts. | **24.0** subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Praires (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 5 Qualitative Rating (-10)

5.0 max 20pts. | **29.0** subtotal

Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [ ] Aquatic bed
- [2] Emergent
- [ ] Shrub
- [ ] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [ ] Moderately low (2)
- [x] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [ ] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [x] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [1] Vegetated hummucks/tussucks
- [ ] Coarse woody debris >15cm (6in)
- [ ] Standing dead >25cm (10in) dbh
- [ ] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's 1 vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's 2 vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's 3 vegetation and is of high quality

Narrative Description of Vegetation Quality

Low spp diversity and/or predominance of nonnative or low disturbance tolerant native species
Native spp are dominant component of the vegetation, mod although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generallyw/o presence of rare threatened or endangered spp to
A predominance of native species, with nonnative spp high and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

29.0	**TOTAL (Max 100 pts)**
1	**Category**

Wetland ID:	W-CRW-001

ORAM Summary Worksheet

		Circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	*NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	*NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	*NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	*NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	*NO	If yes, Category 1.
	Question 6. Bogs	YES	*NO	If yes, Category 3.
	Question 7. Fens	YES	*NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	*NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES	*NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	*NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	1		
	Metric 2. Buffers and surrounding land use	7		
	Metric 3. Hydrology	6		
	Metric 4. Habitat	10		
	Metric 5. Special Wetland Communities	0		
	Metric 6. Plant communities, interspersion, microtopography	5		
	TOTAL SCORE	29		Category based on score breakpoints

Complete Wetland Categorization Worksheet.

Wetland ID:	W-CRW-001

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	***NO**	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over- categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	***NO**	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	***NO**	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	***YES** Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	***NO**	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1- 54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	***NO** Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	***Category 1**	Category 2	Category 3	

End of Ohio Rapid Assessment Method for Wetlands.

Version 5.0	**Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization**
	Background Information Scoring **Boundary Worksheet Narrative Rating** **Field Form Quantitative Rating** **ORAM Summary Worksheet** **Wetland Categorization Worksheet** Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland may be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

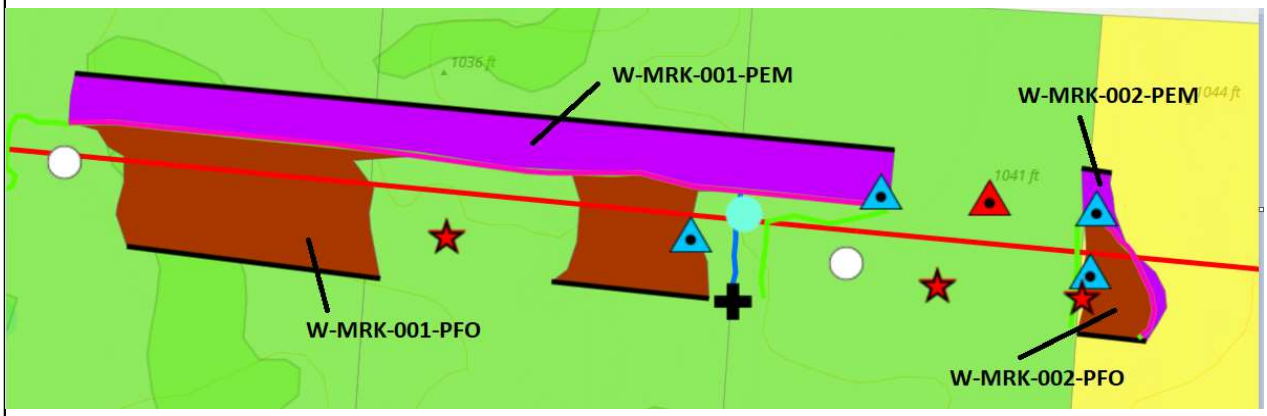
It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To properly answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx

Background Information

Name:	**MRK, AJH**
Date:	**6/14/2023**
Affiliation:	**AECOM**
Address:	**707 Grant Street, 5th Floor, Pittsburgh, PA 15219**
Phone Number:	**814-516-1130**
e-mail address:	mathhew.kline@aecom.com
Name of Wetland:	**W-MRK-001, W-MRK-002**
Vegetation Communit(ies):	**PEM/PFO**
HGM Class(es):	**Depressed**

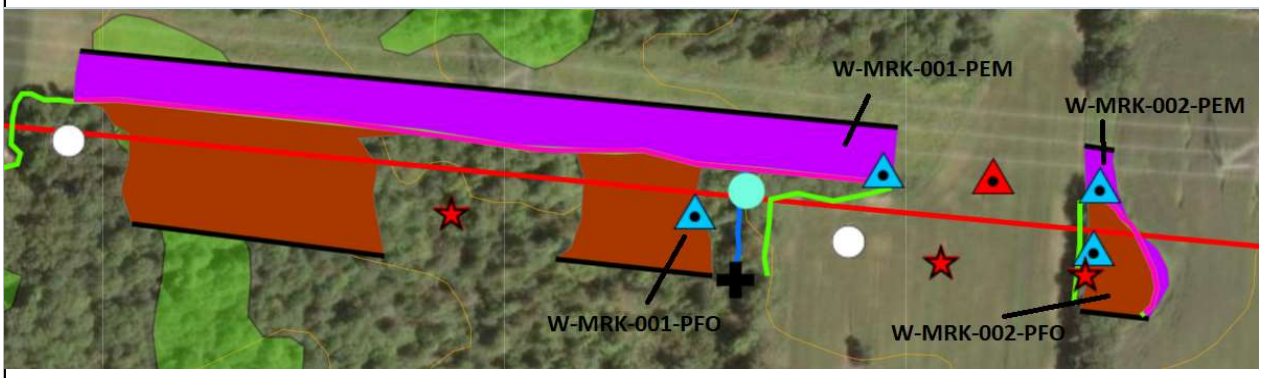
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.



Lat/Long or UTM Coordinate:	**40.222487, -82.82607 and 40.222414, -82.824598**
USGS Quad Name:	**Jersey**
County:	**Delaware**
Township:	**Trenton**
Section and Subsection:	**4N 16W**
Hydrologic Unit Code:	**Prairie Run-Big Walnut Creek 050600011306**
Site Visit:	**6/14/2023**
National Wetland Inventory Map:	**See Figure 2**
Ohio Wetland Inventory Map:	**See Figure 2**
Soil Survey:	**See Figure 2**
Delineation report/map:	**See Figure 3**

Name of Wetland:	W-MRK-001, W-MRK-002		
Wetland Size (delineated acres):	7.55	Wetland Size (Estimated total acres):	8.33

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.



Comments, Narrative Discussion, Justification of Category Changes:

PEM/PFO wetland located within a large depression collecting surface runoff and seasonal flooding. Signs of standing water were observed throughout the wetland. Wetland continues outside current study area.

Final score:	39	Category:	Modified 2

Wetland ID:	W-MRK-001, W-MRK-002

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. Areas with a high degree of hydrologic interaction should be scored as a single wetland. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human- induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		X
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		X

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Wetland ID:	W-MRK-001, W-MRK-002

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature and by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	*NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	*NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	*NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	*NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis* , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	*NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	*NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	*NO Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	*NO Go to Question 8b

Wetland ID:	W-MRK-001, W-MRK-002

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	***NO** Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	***NO** Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	***NO** Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	***NO** Complete Quantitative Rating

Wetland ID:	W-MRK-001, W-MRK-002

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	oak opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Wetland ID:	W-MRK-001, W-MRK-002

Site:	Vassell-Green Chapel	Rater(s):	MRK, AJH	Date:	6/14/2023

Field ID:

W-MRK-001 PEM/PFO, W-MRK-002 PEM/PFO

Delineated acres:	8.33
Total acres:	35.00

Metric 1. Wetland Area (size).

5.0 (max 6 pts) | **5.0** (subtotal)

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [x] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [ ] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

2.0 (max 14 pts.) | **7.0** (subtotal)

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [x] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [ ] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [ ] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [x] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

14.0 (max 30 pts.) | **21.0** (subtotal)

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [x] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [x] Part of wetland/upland (e.g. forest), complex (1)
- [ ] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select one.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [ ] Regularly inundated/saturated (3)
- [ ] Seasonally inundated (2)
- [x] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [x] Recovered (7)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [x] ditch
- [ ] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [x] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] Other:

Metric 4. Habitat Alteration and Development.

14.0 (max 20 pts.) | **35.0** (subtotal)

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [x] Recovered (3)
- [ ] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [x] Good (5)
- [ ] Moderately good (4)
- [ ] Fair (3)
- [ ] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [x] Recovered (6)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [x] mowing
- [ ] grazing
- [x] clearcutting
- [ ] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [x] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [ ] sedimentation
- [ ] dredging
- [x] farming
- [ ] nutrient enrichment

35.0 (subtotal this page)

ORAM v. 5.0 Field Form Quantitative Rating

Wetland ID:	W-MRK-001, W-MRK-002

Site:	Vassell-Green Chapel	Rater(s):	MRK, AJH	Date:	6/14/2023

Field ID:

W-MRK-001 PEM/PFO, W-MRK-002 PEM/PFO

35.0
subtotal this page

0.0 max 10 pts. **35.0** subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Praires (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 5 Qualitative Rating (-10)

4.0 max 20pts. **39.0** subtotal

Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- [ ] Aquatic bed
- [2] Emergent
- [ ] Shrub
- [2] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

6b. horizontal (plan view) Interspersion.

Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [x] Moderate (3)
- [ ] Moderately low (2)
- [ ] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer

Table 1 ORAM long form for list. Add or deduct points for coverage

- [x] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [ ] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [ ] Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- [0] Vegetated hummucks/tussucks
- [1] Coarse woody debris >15cm (6in)
- [1] Standing dead >25cm (10in) dbh
- [0] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's 1 vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's 2 vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's 3 vegetation and is of high quality

Narrative Description of Vegetation Quality

Low spp diversity and/or predominance of nonnative or low disturbance tolerant native species
Native spp are dominant component of the vegetation, mod although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generallyw/o presence of rare threatened or endangered spp to
A predominance of native species, with nonnative spp high and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

39.0 **TOTAL (Max 100 pts)**

Modified 2 **Category**

Case No. 24-0014-EL-BLN

Part 6 of 9

Wetland ID:	W-MRK-001, W-MRK-002

ORAM Summary Worksheet

		Circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	*NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	*NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	*NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	*NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	*NO	If yes, Category 1.
	Question 6. Bogs	YES	*NO	If yes, Category 3.
	Question 7. Fens	YES	*NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	*NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	*NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	5		
	Metric 2. Buffers and surrounding land use	2		
	Metric 3. Hydrology	14		
	Metric 4. Habitat	14		
	Metric 5. Special Wetland Communities	0		
	Metric 6. Plant communities, interspersion, microtopography	4		
	TOTAL SCORE	39		Category based on score breakpoints

Complete Wetland Categorization Worksheet.

Wetland ID:	W-MRK-001, W-MRK-002

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	***NO**	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over- categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	***NO**	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	***NO**	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES Wetland is assigned to the appropriate category based on the scoring range	***NO**	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	***YES** Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1- 54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	***NO** Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	Category 1	***Category 2**	Category 3	

End of Ohio Rapid Assessment Method for Wetlands.

Version 5.0	**Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization**
	Background Information Scoring **Boundary Worksheet Narrative Rating** **Field Form Quantitative Rating** **ORAM Summary Worksheet** **Wetland Categorization Worksheet** Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

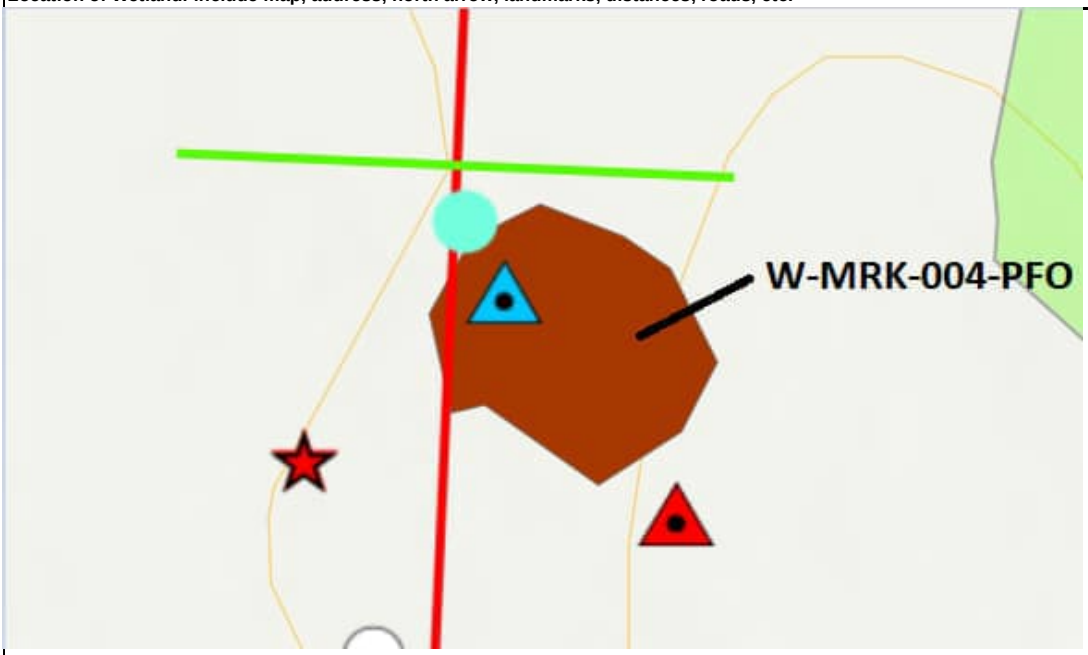
The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland may be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To properly answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx

Background Information	
Name:	**MRK, AJH**
Date:	**6/15/2023**
Affiliation:	**AECOM**
Address:	**707 Grant Street, 5th Floor, Pittsburgh, PA 15219**
Phone Number:	**814-516-1130**
e-mail address:	mathhew.kline@aecom.com
Name of Wetland:	**W-MRK-004**
Vegetation Communit(ies):	**PFO**
HGM Class(es):	**Depressional**

Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.



Lat/Long or UTM Coordinate:	**40.148161, -82.748641**
USGS Quad Name:	**Jersey**
County:	**Licking**
Township:	**Monroe**
Section and Subsection:	**3N 15W**
Hydrologic Unit Code:	**Duncan Run 050600011307**
Site Visit:	**6/15/2023**
National Wetland Inventory Map:	**See Figure 2**
Ohio Wetland Inventory Map:	**See Figure 2**
Soil Survey:	**See Figure 2**
Delineation report/map:	**See Figure 3**

Name of Wetland:	W-MRK-004		
Wetland Size (delineated acres):	0.37	Wetland Size (Estimated total acres):	0.37

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.



Comments, Narrative Discussion, Justification of Category Changes:

PFO wetland is located within a forested depression. Depression is collecting surface runoff from the surrounding area and is seasonally inundated. Wetland boundary follows edge of depression.

Final score:	35	Category:	Modified 2

Wetland ID:	W-MRK-004

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. Areas with a high degree of hydrologic interaction should be scored as a single wetland. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human- induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		X
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		X

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Wetland ID:	W-MRK-004

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature and by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	***NO** Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	***NO** Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	***NO** Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	***NO** Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis* , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	***NO** Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	***NO** Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	***NO** Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	***NO** Go to Question 8b

Wetland ID:	W-MRK-004

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	***NO** Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	***NO** Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	***NO** Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	***NO** Complete Quantitative Rating

Wetland ID:	W-MRK-004

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	oak opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Wetland ID:	W-MRK-004

Site:	Vassell-Green Chapel	Rater(s):	MRK, AJH	Date:	6/15/2023

Field ID:

W-MRK-004 PFO

Delineated acres:	0.37
Total acres:	0.37

Metric 1. Wetland Area (size).

2.0 (max 6 pts) | 2.0 (subtotal)

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [x] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

6.0 (max 14 pts.) | 8.0 (subtotal)

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [x] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [x] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [ ] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [ ] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

12.0 (max 30 pts.) | 20.0 (subtotal)

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [x] Part of wetland/upland (e.g. forest), complex (1)
- [ ] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select one.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [ ] Regularly inundated/saturated (3)
- [x] Seasonally inundated (2)
- [ ] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [x] Recovered (7)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] ditch
- [ ] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] Other:

Metric 4. Habitat Alteration and Development.

12.0 (max 20 pts.) | 32.0 (subtotal)

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [x] Recovered (3)
- [ ] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [x] Fair (3)
- [ ] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [x] Recovered (6)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] mowing
- [ ] grazing
- [ ] clearcutting
- [x] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [x] sedimentation
- [ ] dredging
- [x] farming
- [ ] nutrient enrichment

32.0 (subtotal this page)

ORAM v. 5.0 Field Form Quantitative Rating

Wetland ID:	W-MRK-004

Site:	Vassell-Green Chapel	Rater(s):	MRK, AJH	Date:	6/15/2023

Field ID:

W-MRK-004 PFO

32.0
subtotal this page

0.0 max 10 pts. **32.0** subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Praires (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 5 Qualitative Rating (-10)

3.0 max 20pts. **35.0** subtotal

Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [ ] Aquatic bed
- [ ] Emergent
- [ ] Shrub
- [1] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [ ] Moderately low (2)
- [x] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [x] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [ ] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [0] Vegetated hummucks/tussucks
- [1] Coarse woody debris >15cm (6in)
- [1] Standing dead >25cm (10in) dbh
- [0] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's 1 vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's 2 vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's 3 vegetation and is of high quality

Narrative Description of Vegetation Quality

Low spp diversity and/or predominance of nonnative or low disturbance tolerant native species
Native spp are dominant component of the vegetation, mod although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generallyw/o presence of rare threatened or endangered spp to
A predominance of native species, with nonnative spp high and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

35.0 **TOTAL (Max 100 pts)**

Modified 2 **Category**

Wetland ID:	W-MRK-004

ORAM Summary Worksheet

		Circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	*NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	*NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	*NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	*NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	*NO	If yes, Category 1.
	Question 6. Bogs	YES	*NO	If yes, Category 3.
	Question 7. Fens	YES	*NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	*NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	*NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	2		
	Metric 2. Buffers and surrounding land use	6		
	Metric 3. Hydrology	12		
	Metric 4. Habitat	12		
	Metric 5. Special Wetland Communities	0		
	Metric 6. Plant communities, interspersion, microtopography	3		
	TOTAL SCORE	35		Category based on score breakpoints

Complete Wetland Categorization Worksheet.

Wetland ID:	W-MRK-004

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	***NO**	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over- categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	***NO**	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	***NO**	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES Wetland is assigned to the appropriate category based on the scoring range	***NO**	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	***YES** Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1- 54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	***NO** Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	Category 1	***Category 2**	Category 3	

End of Ohio Rapid Assessment Method for Wetlands.

Version 5.0	**Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization**
	Background Information Scoring **Boundary Worksheet Narrative Rating** **Field Form Quantitative Rating** **ORAM Summary Worksheet** **Wetland Categorization Worksheet** Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland may be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

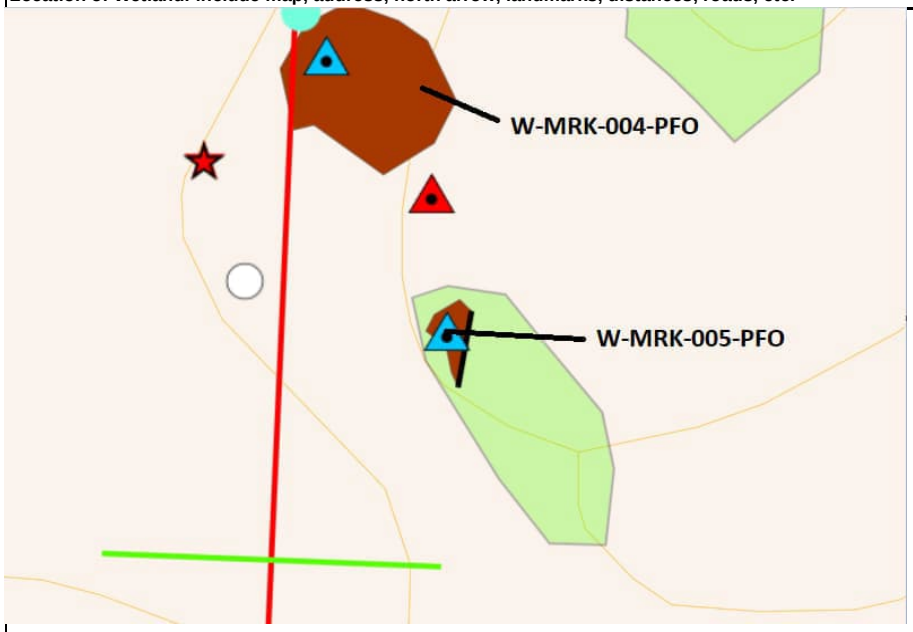
It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To properly answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx

Background Information

Name:	**MRK, AJH**
Date:	**6/15/2023**
Affiliation:	**AECOM**
Address:	**707 Grant Street, 5th Floor, Pittsburgh, PA 15219**
Phone Number:	**814-516-1130**
e-mail address:	mathhew.kline@aecom.com
Name of Wetland:	**W-MRK-005**
Vegetation Communit(ies):	**PFO**
HGM Class(es):	**Depressional**

Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.



Lat/Long or UTM Coordinate:	**40.147472, -82.748273**
USGS Quad Name:	**Jersey**
County:	**Licking**
Township:	**Monroe**
Section and Subsection:	**3N 15W**
Hydrologic Unit Code:	**Duncan Run 050600011307**
Site Visit:	**6/15/2023**
National Wetland Inventory Map:	**See Figure 2**
Ohio Wetland Inventory Map:	**See Figure 2**
Soil Survey:	**See Figure 2**
Delineation report/map:	**See Figure 3**

Name of Wetland:	W-MRK-005		
Wetland Size (delineated acres):	0.03	Wetland Size (Estimated total acres):	0.03

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.



Comments, Narrative Discussion, Justification of Category Changes:

This PFO wetland is located within a forested depression. Depression is collecting surface runoff from the surrounding area and is seasonally inundated. Wetland boundary follows edge of depression.

Final score:	35	Category:	Modified 2

Wetland ID:	W-MRK-005

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. Areas with a high degree of hydrologic interaction should be scored as a single wetland. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human- induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		X
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		X

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Wetland ID:	W-MRK-005

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature and by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	***NO** Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	***NO** Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	***NO** Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	***NO** Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis* , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	***NO** Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	***NO** Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	***NO** Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	***NO** Go to Question 8b

Wetland ID:	W-MRK-005

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	***NO** Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	***NO** Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	***NO** Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	***NO** Complete Quantitative Rating

Wetland ID:	W-MRK-005

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	oak opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Wetland ID:	W-MRK-005

Site:	Vassell-Green Chapel	Rater(s):	MRK, AJH	Date:	6/15/2023

Field ID:

W-MRK-005 PFO

Delineated acres:	0,03
Total acres:	0.35

Metric 1. Wetland Area (size).

2.0 (max 6 pts) | 2.0 (subtotal)

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [x] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

6.0 (max 14 pts.) | 8.0 (subtotal)

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [x] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [x] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [ ] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [ ] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

12.0 (max 30 pts.) | 20.0 (subtotal)

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [x] Part of wetland/upland (e.g. forest), complex (1)
- [ ] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select one.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [ ] Regularly inundated/saturated (3)
- [x] Seasonally inundated (2)
- [ ] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [x] Recovered (7)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] ditch
- [ ] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] Other:

Metric 4. Habitat Alteration and Development.

12.0 (max 20 pts.) | 32.0 (subtotal)

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [x] Recovered (3)
- [ ] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [x] Fair (3)
- [ ] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [x] Recovered (6)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] mowing
- [ ] grazing
- [ ] clearcutting
- [x] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [x] sedimentation
- [ ] dredging
- [x] farming
- [ ] nutrient enrichment

32.0 (subtotal this page)

ORAM v. 5.0 Field Form Quantitative Rating

Wetland ID:	W-MRK-005

Site:	Vassell-Green Chapel	Rater(s):	MRK, AJH	Date:	6/15/2023

Field ID:

W-MRK-005 PFO

32.0 subtotal this page

0.0 max 10 pts. **32.0** subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Praires (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 5 Qualitative Rating (-10)

3.0 max 20pts. **35.0** subtotal

Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- [ ] Aquatic bed
- [ ] Emergent
- [ ] Shrub
- [1] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

6b. horizontal (plan view) Interspersion.

Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [ ] Moderately low (2)
- [x] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer

Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [x] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [ ] Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- [0] Vegetated hummucks/tussucks
- [1] Coarse woody debris >15cm (6in)
- [1] Standing dead >25cm (10in) dbh
- [0] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's 1 vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's 2 vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's 3 vegetation and is of high quality

Narrative Description of Vegetation Quality

Low spp diversity and/or predominance of nonnative or low disturbance tolerant native species
Native spp are dominant component of the vegetation, mod although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generallyw/o presence of rare threatened or endangered spp to
A predominance of native species, with nonnative spp high and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

35.0 **TOTAL (Max 100 pts)**

Modified 2 **Category**

Wetland ID:	W-MRK-005

ORAM Summary Worksheet

		Circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	*NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	*NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	*NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	*NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	*NO	If yes, Category 1.
	Question 6. Bogs	YES	*NO	If yes, Category 3.
	Question 7. Fens	YES	*NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	*NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	*NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	2		
	Metric 2. Buffers and surrounding land use	6		
	Metric 3. Hydrology	12		
	Metric 4. Habitat	12		
	Metric 5. Special Wetland Communities	0		
	Metric 6. Plant communities, interspersion, microtopography	3		
	TOTAL SCORE	35		Category based on score breakpoints

Complete Wetland Categorization Worksheet.

Wetland ID:	W-MRK-005

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	***NO**	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over- categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	***NO**	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	***NO**	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES Wetland is assigned to the appropriate category based on the scoring range	***NO**	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	***YES** Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1- 54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	***NO** Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	Category 1	***Category 2**	Category 3	

End of Ohio Rapid Assessment Method for Wetlands.

Version 5.0	**Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization**
	Background Information Scoring **Boundary Worksheet Narrative Rating** **Field Form Quantitative Rating** **ORAM Summary Worksheet** **Wetland Categorization Worksheet** Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

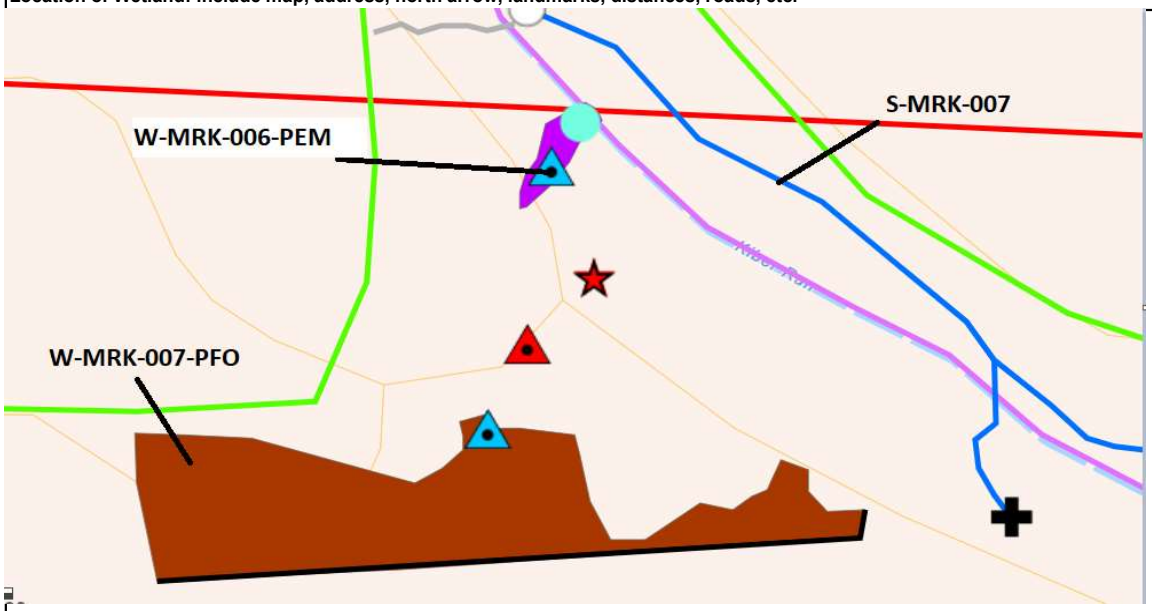
The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland may be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To properly answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx

Background Information	
Name:	**MRK, AJH**
Date:	**6/16/2023**
Affiliation:	**AECOM**
Address:	**707 Grant Street, 5th Floor, Pittsburgh, PA 15219**
Phone Number:	**814-516-1130**
e-mail address:	mathhew.kline@aecom.com
Name of Wetland:	**W-MRK-006**
Vegetation Communit(ies):	**Depressional**
HGM Class(es):	**PEM**

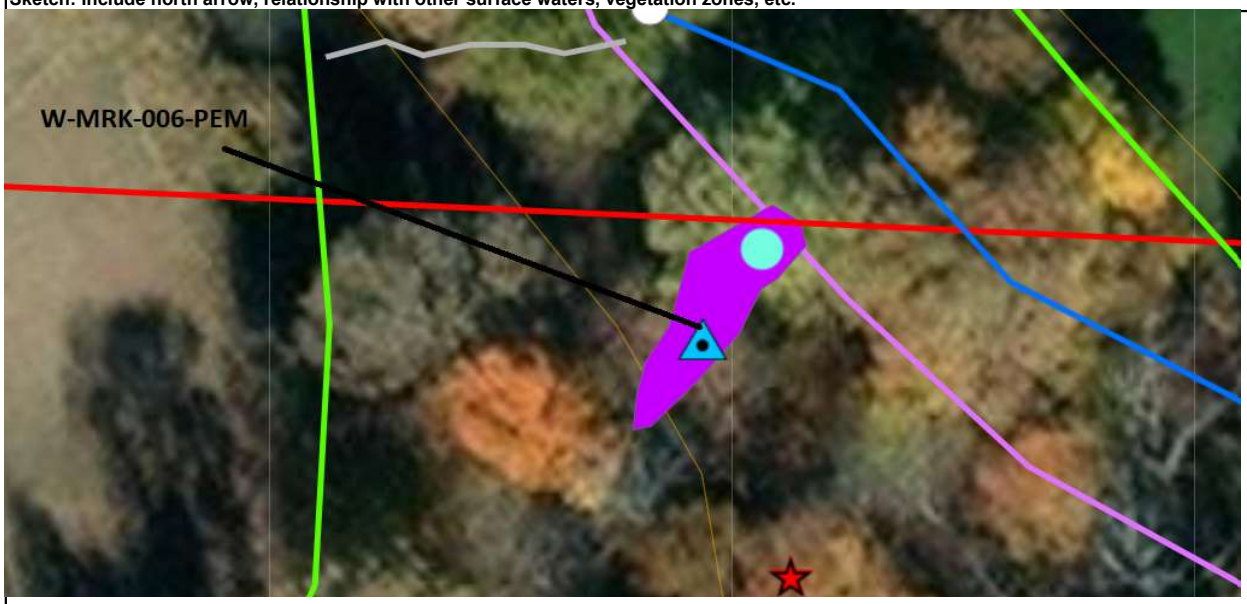
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.



Lat/Long or UTM Coordinate:	**40.128403, -82.725013**
USGS Quad Name:	**Jersey**
County:	**Licking**
Township:	**Monroe**
Section and Subsection:	**3N 15W**
Hydrologic Unit Code:	**Headwaters Raccoon Creek 050400060301**
Site Visit:	**6/16/2023**
National Wetland Inventory Map:	**See Figure 2**
Ohio Wetland Inventory Map:	**See Figure 2**
Soil Survey:	**See Figure 2**
Delineation report/map:	**See Figure 3**

Name of Wetland:	W-MRK-006		
Wetland Size (delineated acres):	0.02	Wetland Size (Estimated total acres):	0.02

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.



Comments, Narrative Discussion, Justification of Category Changes:

This PEM wetland is located within a depression on the floodplain of a perennial watercourse. Wetland boundary follows edge of depression and is inundated seasonally. No vegetation within wetland due to inundation.

Final score:	23	Category:	1

Wetland ID:	W-MRK-006

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. Areas with a high degree of hydrologic interaction should be scored as a single wetland. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human- induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		X
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		X

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Wetland ID:	W-MRK-006

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature and by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	***NO** Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	***NO** Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	***NO** Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	***NO** Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis* , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	***NO** Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	***NO** Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	***NO** Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	***NO** Go to Question 8b

Wetland ID:	W-MRK-006

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	***NO** Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	***NO** Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	***NO** Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	***NO** Complete Quantitative Rating

Wetland ID:	W-MRK-006

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	oak opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Wetland ID:	W-MRK-006

Site:	Vassell-Green Chapel	Rater(s):	MRK, AJH	Date:	6/16/2023

Field ID:

W-MRK-006 PEM

Delineated acres:	0.02
Total acres:	0.02

Metric 1. Wetland Area (size).

0.0 / 0.0 (max 6 pts / subtotal)

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [ ] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [x] <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

4.0 / 4.0 (max 14 pts. / subtotal)

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [x] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [ ] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [x] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [ ] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

10.0 / 14.0 (max 30 pts. / subtotal)

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [x] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [x] Part of wetland/upland (e.g. forest), complex (1)
- [ ] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select one.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [ ] Regularly inundated/saturated (3)
- [ ] Seasonally inundated (2)
- [x] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [ ] Recovered (7)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [x] ditch
- [ ] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] Other:

Metric 4. Habitat Alteration and Development.

6.0 / 20.0 (max 20 pts. / subtotal)

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [ ] Recovered (3)
- [x] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [ ] Fair (3)
- [ ] Poor to fair (2)
- [x] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [ ] Recovered (6)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] mowing
- [ ] grazing
- [ ] clearcutting
- [x] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [x] sedimentation
- [ ] dredging
- [x] farming
- [ ] nutrient enrichment

20.0 (subtotal this page)

ORAM v. 5.0 Field Form Quantitative Rating

Wetland ID:	W-MRK-006

Site:	Vassell-Green Chapel	Rater(s):	MRK, AJH	Date:	6/16/2023

Field ID:

W-MRK-006 PEM

20.0
subtotal this page

0.0 max 10 pts. **20.0** subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Praires (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 5 Qualitative Rating (-10)

3.0 max 20pts. **23.0** subtotal

Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [ ] Aquatic bed
- [1] Emergent
- [ ] Shrub
- [ ] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [ ] Moderately low (2)
- [ ] Low (1)
- [x] None (0)

6c. Coverage of invasive plants. Refer Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [ ] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [x] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [0] Vegetated hummucks/tussucks
- [0] Coarse woody debris >15cm (6in)
- [1] Standing dead >25cm (10in) dbh
- [0] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's 1 vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's 2 vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's 3 vegetation and is of high quality

Narrative Description of Vegetation Quality

Low spp diversity and/or predominance of nonnative or low disturbance tolerant native species
Native spp are dominant component of the vegetation, mod although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generallyw/o presence of rare threatened or endangered spp to
A predominance of native species, with nonnative spp high and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

23.0	**TOTAL (Max 100 pts)**
1	**Category**

Wetland ID:	W-MRK-006

ORAM Summary Worksheet

		Circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	*NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	*NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	*NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	*NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	*NO	If yes, Category 1.
	Question 6. Bogs	YES	*NO	If yes, Category 3.
	Question 7. Fens	YES	*NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	*NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	*NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	0		
	Metric 2. Buffers and surrounding land use	4		
	Metric 3. Hydrology	10		
	Metric 4. Habitat	6		
	Metric 5. Special Wetland Communities	0		
	Metric 6. Plant communities, interspersion, microtopography	3		
	TOTAL SCORE	23		Category based on score breakpoints

Complete Wetland Categorization Worksheet.

Wetland ID:	W-MRK-006

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	***NO**	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over- categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	***NO**	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	***NO**	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	***YES** Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	***NO**	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1- 54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	***NO** Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	***Category 1**	Category 2	Category 3	

End of Ohio Rapid Assessment Method for Wetlands.

Version 5.0	**Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization**
	Background Information Scoring **Boundary Worksheet Narrative Rating** **Field Form Quantitative Rating** **ORAM Summary Worksheet** **Wetland Categorization Worksheet** Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

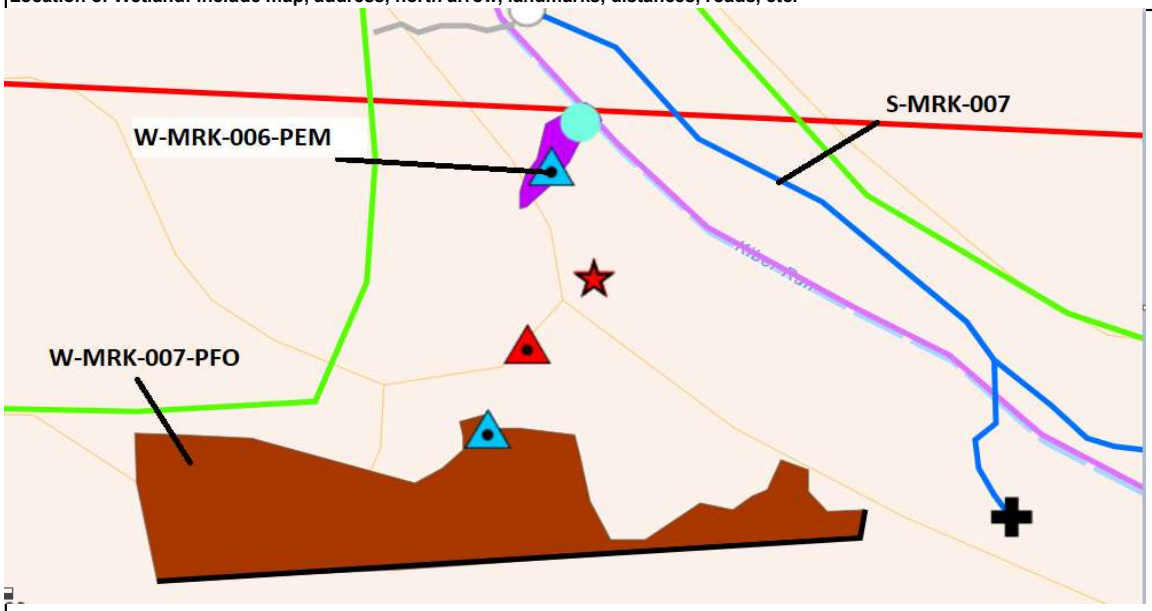
The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland may be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To properly answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx

Background Information	
Name:	**MRK, AJH**
Date:	**6/16/2023**
Affiliation:	**AECOM**
Address:	**707 Grant Street, 5th Floor, Pittsburgh, PA 15219**
Phone Number:	**814-516-1130**
e-mail address:	mathhew.kline@aecom.com
Name of Wetland:	**W-MRK-007**
Vegetation Communit(ies):	**Depressional**
HGM Class(es):	**PFO**

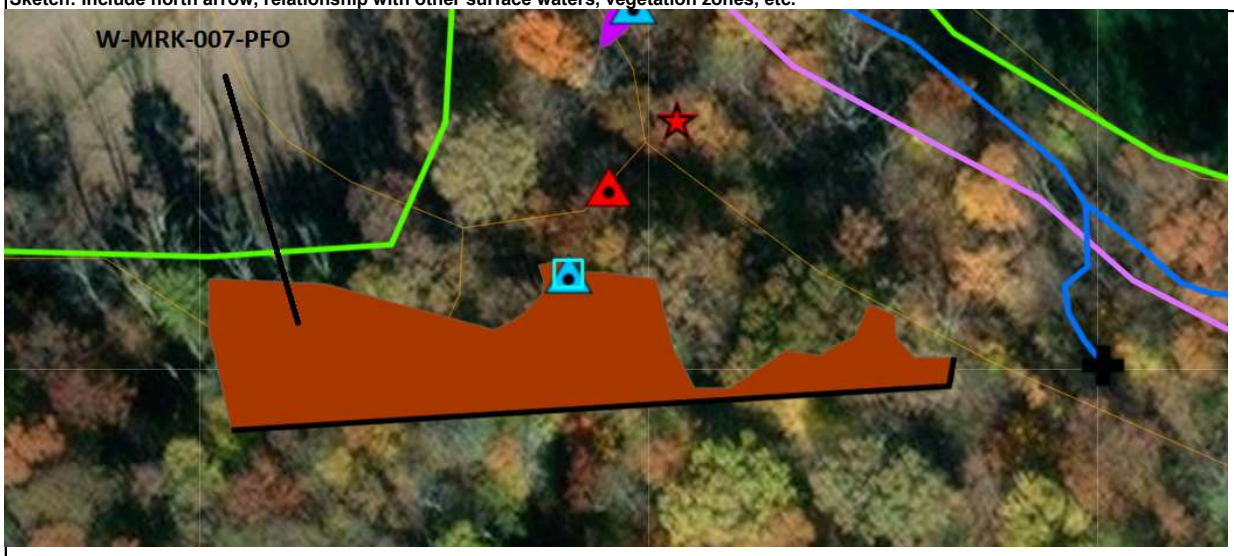
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.



Lat/Long or UTM Coordinate:	**40.1280789, -82.7251133**
USGS Quad Name:	**Jersey**
County:	**Licking**
Township:	**Monroe**
Section and Subsection:	**3N 15W**
Hydrologic Unit Code:	**Headwaters Raccoon Creek 050400060301**
Site Visit:	**6/16/2023**
National Wetland Inventory Map:	**See Figure 2**
Ohio Wetland Inventory Map:	**See Figure 2**
Soil Survey:	**See Figure 2**
Delineation report/map:	**See Figure 3**

Name of Wetland:	W-MRK-007		
Wetland Size (delineated acres):	0.30	Wetland Size (Estimated total acres):	2.00

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.



Comments, Narrative Discussion, Justification of Category Changes:

This PFO wetland is located on the floodplain of a perennial and intermittent watercourse. Depression is seasonally inundated. Wetland boundary follows edge of depression.

Final score:	35.5	Category:	Modified 2

Wetland ID:	W-MRK-007

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. Areas with a high degree of hydrologic interaction should be scored as a single wetland. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human- induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		X
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		X

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Wetland ID:	W-MRK-007

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature and by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	*NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	*NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	*NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	*NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis* , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	*NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	*NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	*NO Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	*NO Go to Question 8b

Wetland ID:	W-MRK-007

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	***NO** Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	***NO** Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	***NO** Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	***NO** Complete Quantitative Rating

Wetland ID:	W-MRK-007

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	oak opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Wetland ID:	W-MRK-007

Site:	Vassell-Green Chapel	Rater(s):	MRK, AJH	Date:	6/16/2023

Field ID:

W-MRK-007 PFO

Delineated acres:	0.30
Total acres:	2.00

Metric 1. Wetland Area (size).

2.0 (max 6 pts) **2.0** (subtotal)

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [x] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

6.0 (max 14 pts.) **8.0** (subtotal)

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [x] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [x] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [ ] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [ ] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

15.0 (max 30 pts.) **23.0** (subtotal)

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [x] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [x] Part of wetland/upland (e.g. forest), complex (1)
- [ ] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select one.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [ ] Regularly inundated/saturated (3)
- [x] Seasonally inundated (2)
- [ ] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [x] Recovered (7)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] ditch
- [ ] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] Other:

Metric 4. Habitat Alteration and Development.

9.5 (max 20 pts.) **32.5** (subtotal)

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [x] Recovered (3)
- [ ] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [ ] Fair (3)
- [x] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [x] Recovered (6)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] mowing
- [ ] grazing
- [ ] clearcutting
- [x] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [x] sedimentation
- [ ] dredging
- [x] farming
- [ ] nutrient enrichment

32.5 (subtotal this page)

ORAM v. 5.0 Field Form Quantitative Rating

Wetland ID:	W-MRK-007

Site:	Vassell-Green Chapel	Rater(s):	MRK, AJH	Date:	6/16/2023

Field ID:

W-MRK-007 PFO

32.5 subtotal this page

0.0 max 10 pts. **32.5** subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Praires (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 5 Qualitative Rating (-10)

3.0 max 20pts. **35.5** subtotal

Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- [ ] Aquatic bed
- [ ] Emergent
- [ ] Shrub
- [1] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

6b. horizontal (plan view) Interspersion.

Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [ ] Moderately low (2)
- [x] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [x] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [ ] Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- [0] Vegetated hummucks/tussucks
- [1] Coarse woody debris >15cm (6in)
- [1] Standing dead >25cm (10in) dbh
- [0] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's 1 vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's 2 vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's 3 vegetation and is of high quality

Narrative Description of Vegetation Quality

Low spp diversity and/or predominance of nonnative or low disturbance tolerant native species
Native spp are dominant component of the vegetation, mod although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generallyw/o presence of rare threatened or endangered spp to
A predominance of native species, with nonnative spp high and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

35.5	**TOTAL (Max 100 pts)**
Modified 2	**Category**

Wetland ID:	W-MRK-007

ORAM Summary Worksheet

		Circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	*NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	*NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	*NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	*NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	*NO	If yes, Category 1.
	Question 6. Bogs	YES	*NO	If yes, Category 3.
	Question 7. Fens	YES	*NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	*NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	*NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	2		
	Metric 2. Buffers and surrounding land use	6		
	Metric 3. Hydrology	15		
	Metric 4. Habitat	9.5		
	Metric 5. Special Wetland Communities	0		
	Metric 6. Plant communities, interspersion, microtopography	3		
	TOTAL SCORE	35.5		Category based on score breakpoints

Complete Wetland Categorization Worksheet.

Wetland ID:	W-MRK-007

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	***NO**	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over- categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	***NO**	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	***NO**	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES Wetland is assigned to the appropriate category based on the scoring range	***NO**	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	***YES** Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1- 54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	***NO** Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	Category 1	***Category 2**	Category 3	

End of Ohio Rapid Assessment Method for Wetlands.

Version 5.0	**Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization**
	Background Information Scoring **Boundary Worksheet Narrative Rating** **Field Form Quantitative Rating** **ORAM Summary Worksheet** **Wetland Categorization Worksheet** Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland may be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

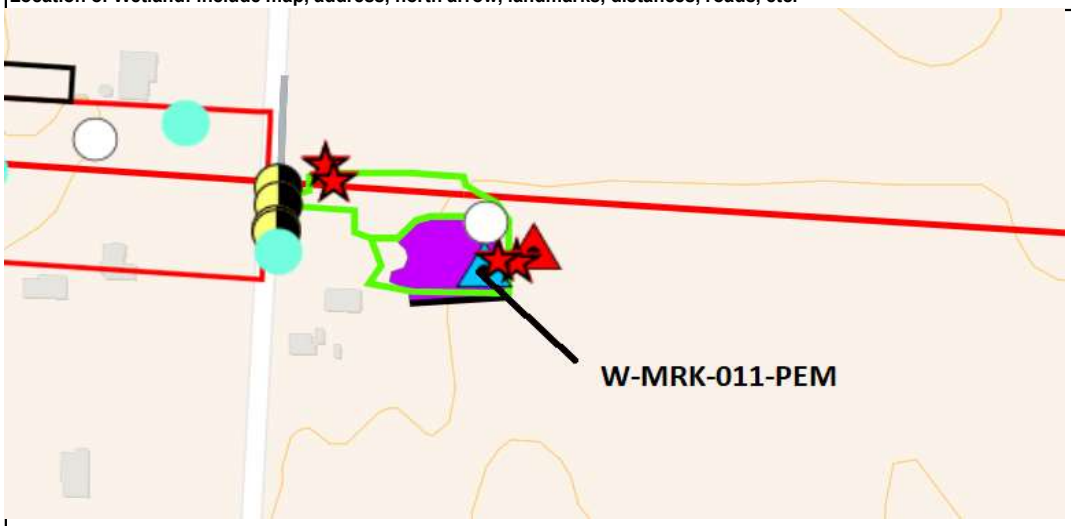
It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To properly answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx

Background Information

Name:	**MRK, RBL**
Date:	**6/22/2023**
Affiliation:	**AECOM**
Address:	**707 Grant Street, 5th Floor, Pittsburgh, PA 15219**
Phone Number:	**814-516-1130**
e-mail address:	mathhew.kline@aecom.com
Name of Wetland:	**W-MRK-011**
Vegetation Communit(ies):	**PEM**
HGM Class(es):	**Depressional**

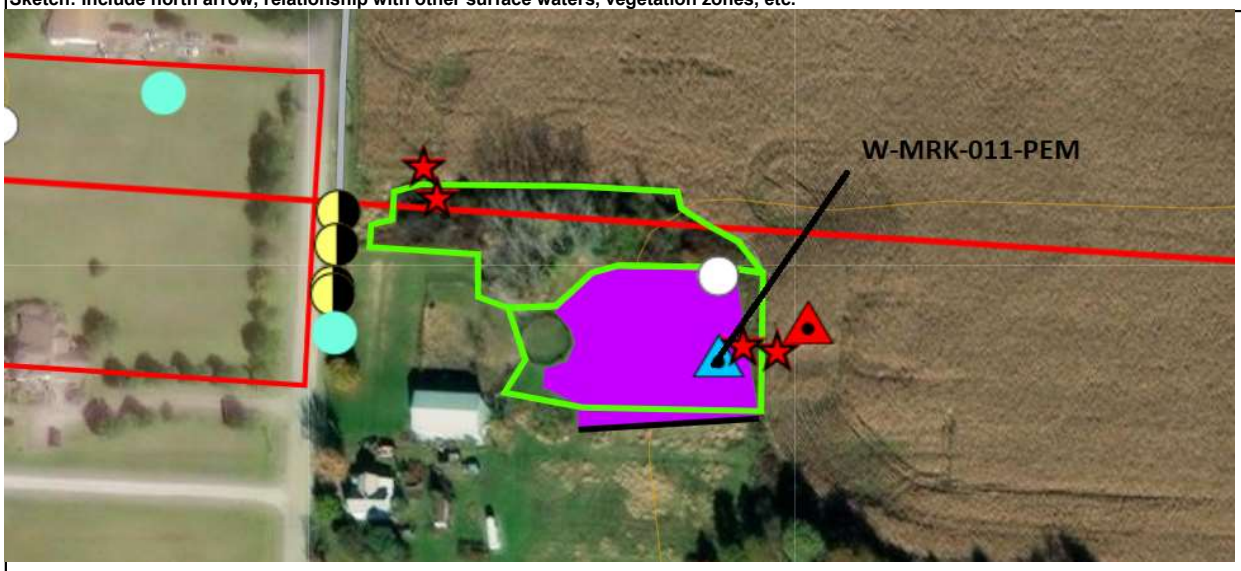
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.



Lat/Long or UTM Coordinate:	**40.1870629, -82.7767043**
USGS Quad Name:	**Jersey**
County:	**Delaware**
Township:	**Harlem**
Section and Subsection:	**T3N R16W**
Hydrologic Unit Code:	**Hoover Reservoir-Big Walnut Creek 050600011308**
Site Visit:	**6/22/2023**
National Wetland Inventory Map:	**See Figure 2**
Ohio Wetland Inventory Map:	**See Figure 2**
Soil Survey:	**See Figure 2**
Delineation report/map:	**See Figure 3**

Name of Wetland:	W-MRK-011		
Wetland Size (delineated acres):	0.40	Wetland Size (Estimated total acres):	0.70

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.



Comments, Narrative Discussion, Justification of Category Changes:

This PEM wetland is located within a depression between a pasture and an agricultural field. Signs of tire ruts were observed throughout the wetland. Depression is collecting surface runoff from the agricultural field to the east.

Final score:	12	Category:	1

Wetland ID:	W-MRK-011

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. Areas with a high degree of hydrologic interaction should be scored as a single wetland. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human- induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		X
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		X

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Wetland ID:	W-MRK-011

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature and by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	*NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	*NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	*NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	*NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis* , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	*NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	*NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	*NO Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	*NO Go to Question 8b

Wetland ID:	W-MRK-011

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	***NO** Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	***NO** Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	***NO** Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	***NO** Complete Quantitative Rating

Wetland ID:	W-MRK-011

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	oak opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Wetland ID:	W-MRK-011

Site:	Vassell-Green Chapel	Rater(s):	MRK, RBL	Date:	6/22/2023

Field ID:

W-MRK-011 PEM

Delineated acres:	0.40
Total acres:	0.70

Metric 1. Wetland Area (size).

2.0 (max 6 pts) | 2.0 (subtotal)

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [x] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

1.0 (max 14 pts.) | 3.0 (subtotal)

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [ ] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [x] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [ ] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [ ] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [x] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

7.0 (max 30 pts.) | 10.0 (subtotal)

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [x] Part of wetland/upland (e.g. forest), complex (1)
- [ ] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select one.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [ ] Regularly inundated/saturated (3)
- [ ] Seasonally inundated (2)
- [x] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [ ] Recovered (7)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] ditch
- [ ] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [x] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] Other:

Metric 4. Habitat Alteration and Development.

6.0 (max 20 pts.) | 16.0 (subtotal)

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [ ] Recovered (3)
- [x] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [ ] Fair (3)
- [ ] Poor to fair (2)
- [x] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [ ] Recovered (6)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] mowing
- [ ] grazing
- [x] clearcutting
- [x] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [x] sedimentation
- [ ] dredging
- [x] farming
- [ ] nutrient enrichment

16.0 (subtotal this page)

ORAM v. 5.0 Field Form Quantitative Rating

Wetland ID:	W-MRK-011

Site:	Vassell-Green Chapel	Rater(s):	MRK, RBL	Date:	6/22/2023

Field ID:

W-MRK-011 PEM

16.0
subtotal this page

0.0 max 10 pts. **16.0** subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Praires (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 5 Qualitative Rating (-10)

-4.0 max 20pts. **12.0** subtotal

Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [ ] Aquatic bed
- [1] Emergent
- [ ] Shrub
- [ ] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [ ] Moderately low (2)
- [ ] Low (1)
- [x] None (0)

6c. Coverage of invasive plants. Refer Table 1 ORAM long form for list. Add or deduct points for coverage

- [x] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [ ] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [ ] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [0] Vegetated hummucks/tussucks
- [0] Coarse woody debris >15cm (6in)
- [0] Standing dead >25cm (10in) dbh
- [0] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's 1 vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's 2 vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's 3 vegetation and is of high quality

Narrative Description of Vegetation Quality

Low spp diversity and/or predominance of nonnative or low disturbance tolerant native species
Native spp are dominant component of the vegetation, mod although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generallyw/o presence of rare threatened or endangered spp to
A predominance of native species, with nonnative spp high and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

12.0 **TOTAL (Max 100 pts)**

1 **Category**

Wetland ID:	W-MRK-011

ORAM Summary Worksheet

		Circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	*NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	*NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	*NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	*NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	*NO	If yes, Category 1.
	Question 6. Bogs	YES	*NO	If yes, Category 3.
	Question 7. Fens	YES	*NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	*NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	*NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	2		
	Metric 2. Buffers and surrounding land use	1		
	Metric 3. Hydrology	7		
	Metric 4. Habitat	6		
	Metric 5. Special Wetland Communities	0		
	Metric 6. Plant communities, interspersion, microtopography	-4		
	TOTAL SCORE	12		Category based on score breakpoints

Complete Wetland Categorization Worksheet.

Wetland ID:	W-MRK-011

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	***NO**	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over- categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	***NO**	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	***NO**	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	***YES** Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	***NO**	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1- 54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	***NO** Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	***Category 1**	Category 2	Category 3	

End of Ohio Rapid Assessment Method for Wetlands.

Version 5.0	**Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization**
	Background Information Scoring **Boundary Worksheet Narrative Rating** **Field Form Quantitative Rating** **ORAM Summary Worksheet** **Wetland Categorization Worksheet** Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland may be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

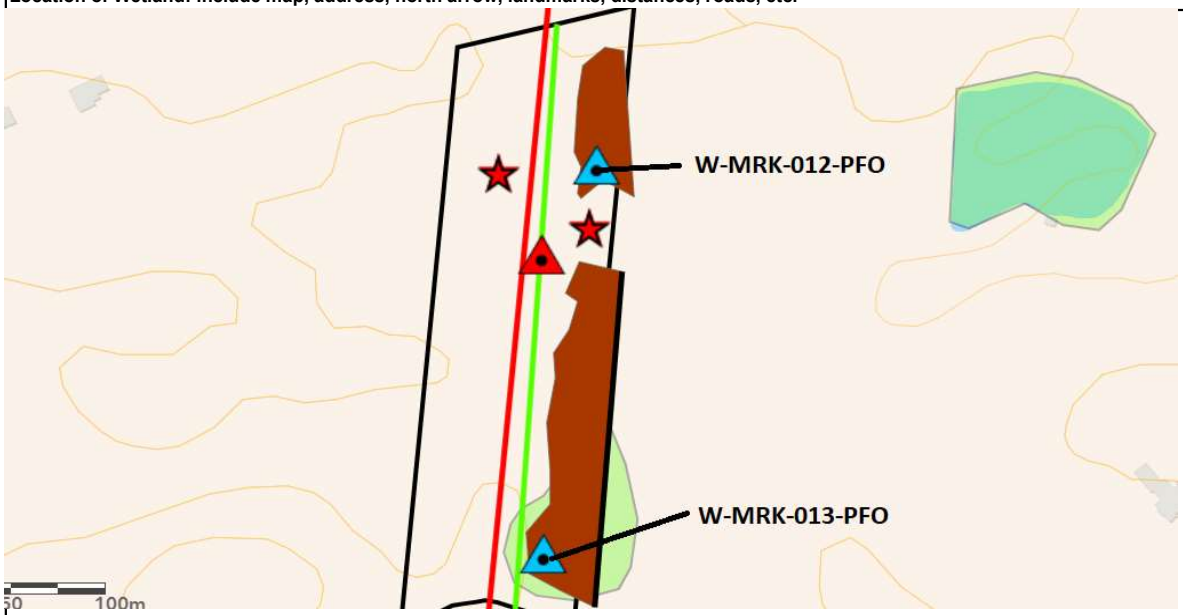
It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To properly answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx

Background Information

Name:	**MRK, TW**
Date:	**6/26/2023**
Affiliation:	**AECOM**
Address:	**707 Grant Street, 5th Floor, Pittsburgh, PA 15219**
Phone Number:	**814-516-1130**
e-mail address:	mathhew.kline@aecom.com
Name of Wetland:	**W-MRK-012, W-MRK-013**
Vegetation Communit(ies):	**PFO**
HGM Class(es):	**Depressional**

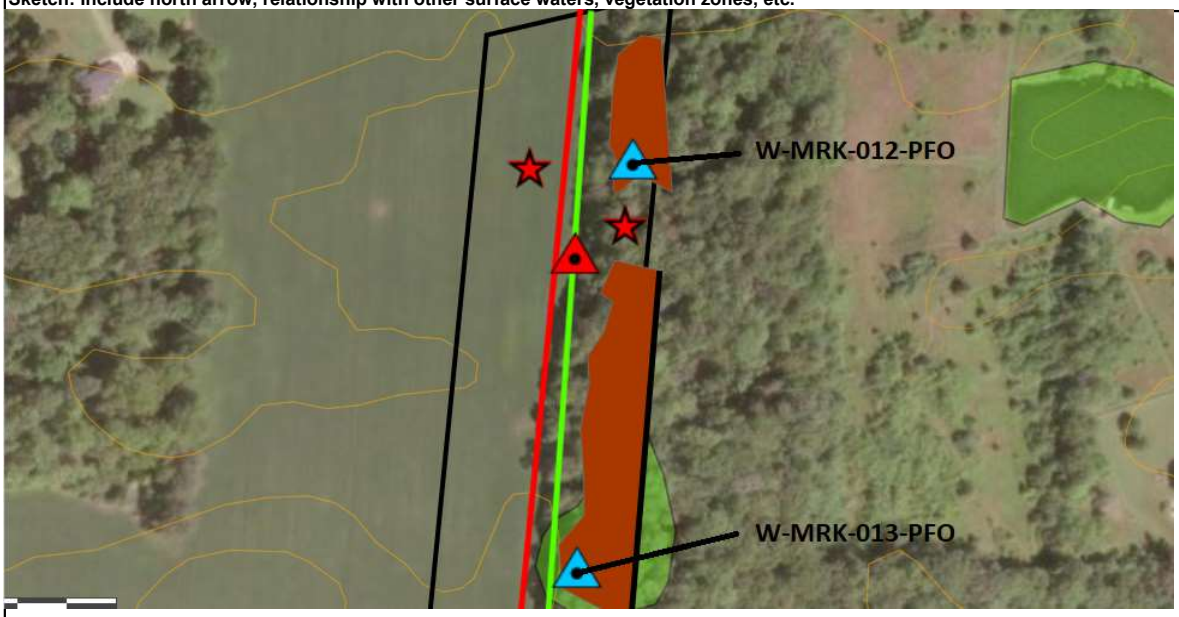
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.



Lat/Long or UTM Coordinate:	**40.21583, -82.813053 and 40.213912, -82.813384**
USGS Quad Name:	**Jersey**
County:	**Delaware**
Township:	**Trenton**
Section and Subsection:	**T3N R16W**
Hydrologic Unit Code:	**Hoover Reservoir-Big Walnut Creek 050600011308**
Site Visit:	**6/26/2023**
National Wetland Inventory Map:	**See Figure 2**
Ohio Wetland Inventory Map:	**See Figure 2**
Soil Survey:	**See Figure 2**
Delineation report/map:	**See Figure 3**

Name of Wetland:	W-MRK-012, W-MRK-013		
Wetland Size (delineated acres):	1.88	Wetland Size (Estimated total acres):	4.53

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.



Comments, Narrative Discussion, Justification of Category Changes:

W-MRK-012 and W-MRK-013: These PFO wetlands are located in a forested depression that is collecting surface runoff from the surrounding area. Depression is seasonally inundated.

Final score:	26	Category:	1

Wetland ID:	W-MRK-012, W-MRK-013

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. Areas with a high degree of hydrologic interaction should be scored as a single wetland. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human- induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		X
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		X

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Wetland ID:	W-MRK-012, W-MRK-013

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature and by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	*NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	*NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	*NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	*NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis* , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	*NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	*NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	*NO Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	*NO Go to Question 8b

Wetland ID:	W-MRK-012, W-MRK-013

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	***NO** Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	***NO** Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	***NO** Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	***NO** Complete Quantitative Rating

Wetland ID:	W-MRK-012, W-MRK-013

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	oak opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Wetland ID:	W-MRK-012, W-MRK-013

Site:	AEP Vassell-Green Chapel	Rater(s):	MRK, TW	Date:	6/26/2023

Field ID:

W-MRK-012 PFO, W-MRK-013 PFO

Delineated acres:	1.88
Total acres:	4.53

3.0 / 3.0 Metric 1. Wetland Area (size).

max 6 pts — subtotal

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [x] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [ ] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

2.0 / 5.0 Metric 2. Upland buffers and surrounding land use.

max 14 pts. — subtotal

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [x] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [ ] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [ ] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [x] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

0.0 / 5.0 Metric 3. Hydrology.

max 30 pts. — subtotal

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [ ] Part of wetland/upland (e.g. forest), complex (1)
- [x] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select one.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [ ] Regularly inundated/saturated (3)
- [ ] Seasonally inundated (2)
- [ ] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [x] Recovered (7)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [x] ditch
- [ ] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] Other:

12.0 / 17.0 Metric 4. Habitat Alteration and Development.

max 20 pts. — subtotal

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [x] Recovered (3)
- [ ] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [x] Fair (3)
- [ ] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [x] Recovered (6)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] mowing
- [ ] grazing
- [ ] clearcutting
- [x] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [x] sedimentation
- [ ] dredging
- [x] farming
- [ ] nutrient enrichment

17.0 subtotal this page

ORAM v. 5.0 Field Form Quantitative Rating

Wetland ID:	W-MRK-012, W-MRK-013

Site:	AEP Vassell-Green Chapel	Rater(s):	MRK, TW	Date:	6/26/2023

Field ID:

W-MRK-012 PFO, W-MRK-013 PFO

17.0 subtotal this page

0.0 max 10 pts. | **17.0** subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Praires (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 5 Qualitative Rating (-10)

9.0 max 20pts. | **26.0** subtotal

Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- [ ] Aquatic bed
- [ ] Emergent
- [ ] Shrub
- [2] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

6b. horizontal (plan view) Interspersion.

Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [x] Moderately low (2)
- [ ] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [ ] Sparse 5-25% cover (-1)
- [x] Nearly absent <5% cover (0)
- [ ] Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- [0] Vegetated hummucks/tussucks
- [2] Coarse woody debris >15cm (6in)
- [1] Standing dead >25cm (10in) dbh
- [2] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's 1 vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's 2 vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's 3 vegetation and is of high quality

Narrative Description of Vegetation Quality

Low spp diversity and/or predominance of nonnative or low disturbance tolerant native species
Native spp are dominant component of the vegetation, mod although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generallyw/o presence of rare threatened or endangered spp to
A predominance of native species, with nonnative spp high and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

26.0 TOTAL (Max 100 pts)

1 Category

Wetland ID:	W-MRK-012, W-MRK-013

ORAM Summary Worksheet

		Circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	*NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	*NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	*NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	*NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	*NO	If yes, Category 1.
	Question 6. Bogs	YES	*NO	If yes, Category 3.
	Question 7. Fens	YES	*NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	*NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	*NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	3		
	Metric 2. Buffers and surrounding land use	2		
	Metric 3. Hydrology	0		
	Metric 4. Habitat	12		
	Metric 5. Special Wetland Communities	0		
	Metric 6. Plant communities, interspersion, microtopography	9		
	TOTAL SCORE	26		Category based on score breakpoints

Complete Wetland Categorization Worksheet.

Wetland ID:	W-MRK-012, W-MRK-013

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	***NO**	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over- categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	***NO**	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	***NO**	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	***YES** Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	***NO**	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1- 54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	***NO** Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	***Category 1**	Category 2	Category 3	

End of Ohio Rapid Assessment Method for Wetlands.

Version 5.0	**Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization**
	Background Information Scoring **Boundary Worksheet Narrative Rating** **Field Form Quantitative Rating** **ORAM Summary Worksheet** **Wetland Categorization Worksheet** Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland may be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

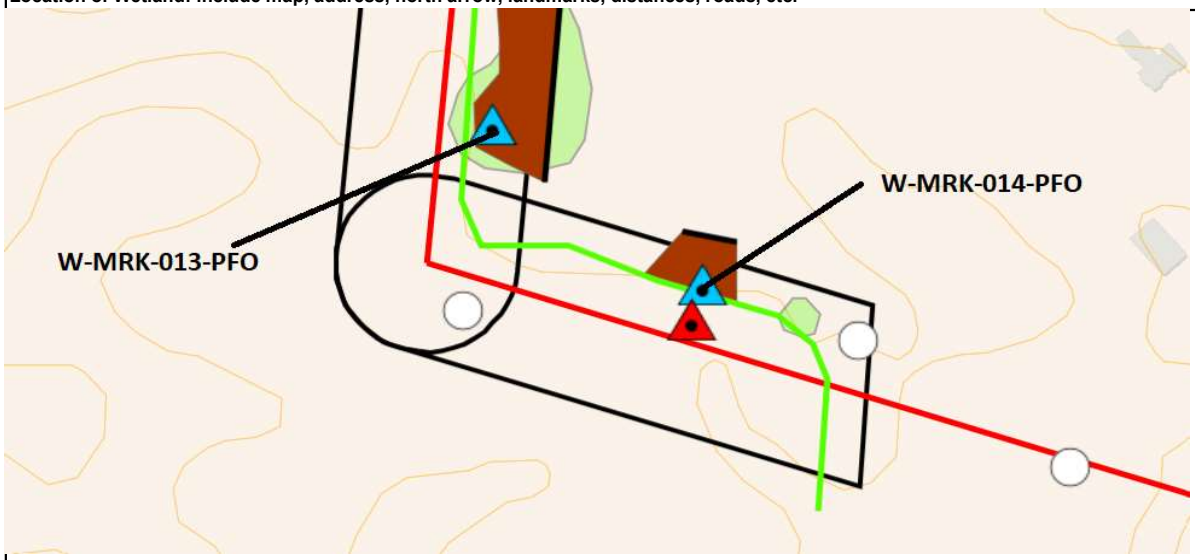
It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To properly answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx

Background Information

Name:	**MRK, TW**
Date:	**6/26/2023**
Affiliation:	**AECOM**
Address:	**707 Grant Street, 5th Floor, Pittsburgh, PA 15219**
Phone Number:	**814-516-1130**
e-mail address:	mathhew.kline@aecom.com
Name of Wetland:	**W-MRK-014**
Vegetation Communit(ies):	**PFO**
HGM Class(es):	**Depressional**

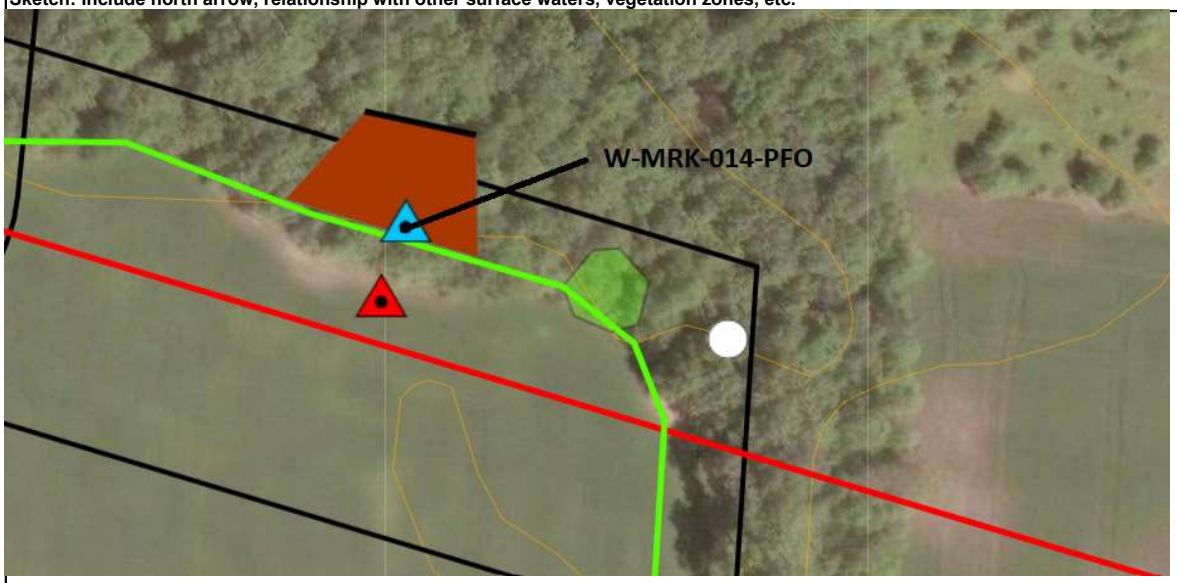
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.



Lat/Long or UTM Coordinate:	**40.213178, -82.812136**
USGS Quad Name:	**Jersey**
County:	**Delaware**
Township:	**Trenton**
Section and Subsection:	**T3N R16W**
Hydrologic Unit Code:	**Hoover Reservoir-Big Walnut Creek 050600011308**
Site Visit:	**6/26/2023**
National Wetland Inventory Map:	**See Figure 2**
Ohio Wetland Inventory Map:	**See Figure 2**
Soil Survey:	**See Figure 2**
Delineation report/map:	**See Figure 3**

Name of Wetland:	W-MRK-014		
Wetland Size (delineated acres):	0.26	Wetland Size (Estimated total acres):	0.40

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.



Comments, Narrative Discussion, Justification of Category Changes:

This PFO wetland is located in a forested depression that is directing surface runoff down a small hillside. Water drains down the hillside and dissipates into an agricultural field. Wetland boundary follows edge of depression.

Final score:	26	Category:	1

Wetland ID:	W-MRK-014

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. Areas with a high degree of hydrologic interaction should be scored as a single wetland. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human- induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		X
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		X

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Wetland ID:	W-MRK-014

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature and by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	*NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	*NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	*NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	*NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis* , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	*NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	*NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	*NO Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	*NO Go to Question 8b

Wetland ID:	W-MRK-014

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	***NO** Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	***NO** Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	***NO** Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	***NO** Complete Quantitative Rating

Wetland ID:	W-MRK-014

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	oak opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Wetland ID:	W-MRK-014

Site:	AEP Vassell-Green Chapel	Rater(s):	MRK, TW	Date:	6/26/2023

Field ID:

W-MRK-014 PFO

Delineated acres:	0.26
Total acres:	0.40

Metric 1. Wetland Area (size).

2.0 (max 6 pts) | 2.0 (subtotal)

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [x] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

2.0 (max 14 pts.) | 4.0 (subtotal)

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [x] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [ ] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [ ] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [x] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

11.0 (max 30 pts.) | 15.0 (subtotal)

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [ ] Part of wetland/upland (e.g. forest), complex (1)
- [x] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select one.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [ ] Regularly inundated/saturated (3)
- [ ] Seasonally inundated (2)
- [x] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [x] Recovered (7)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] ditch
- [ ] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] Other:

Metric 4. Habitat Alteration and Development.

8.0 (max 20 pts.) | 23.0 (subtotal)

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [x] Recovered (3)
- [ ] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [ ] Fair (3)
- [x] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [ ] Recovered (6)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] mowing
- [ ] grazing
- [ ] clearcutting
- [x] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [x] sedimentation
- [ ] dredging
- [x] farming
- [ ] nutrient enrichment

23.0 (subtotal this page)

ORAM v. 5.0 Field Form Quantitative Rating

Wetland ID:	W-MRK-014

Site:	AEP Vassell-Green Chapel	Rater(s):	MRK, TW	Date:	6/26/2023

Field ID:

W-MRK-014 PFO

23.0 subtotal this page

0.0 max 10 pts. | **23.0** subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Praires (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 5 Qualitative Rating (-10)

3.0 max 20pts. | **26.0** subtotal

Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [ ] Aquatic bed
- [ ] Emergent
- [ ] Shrub
- [1] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [ ] Moderately low (2)
- [x] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [ ] Sparse 5-25% cover (-1)
- [x] Nearly absent <5% cover (0)
- [ ] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [0] Vegetated hummucks/tussucks
- [0] Coarse woody debris >15cm (6in)
- [1] Standing dead >25cm (10in) dbh
- [0] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's 1 vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's 2 vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's 3 vegetation and is of high quality

Narrative Description of Vegetation Quality

Low spp diversity and/or predominance of nonnative or low disturbance tolerant native species
Native spp are dominant component of the vegetation, mod although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generallyw/o presence of rare threatened or endangered spp to
A predominance of native species, with nonnative spp high and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

26.0	**TOTAL (Max 100 pts)**
1	**Category**

Wetland ID:	W-MRK-014

ORAM Summary Worksheet

		Circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	*NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	*NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	*NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	*NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	*NO	If yes, Category 1.
	Question 6. Bogs	YES	*NO	If yes, Category 3.
	Question 7. Fens	YES	*NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	*NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	*NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	2		
	Metric 2. Buffers and surrounding land use	2		
	Metric 3. Hydrology	11		
	Metric 4. Habitat	8		
	Metric 5. Special Wetland Communities	0		
	Metric 6. Plant communities, interspersion, microtopography	3		
	TOTAL SCORE	26		Category based on score breakpoints

Complete Wetland Categorization Worksheet.

Wetland ID:	W-MRK-014

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	***NO**	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over- categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	***NO**	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	***NO**	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	***YES** Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	***NO**	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1- 54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	***NO** Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	***Category 1**	Category 2	Category 3	

End of Ohio Rapid Assessment Method for Wetlands.

Version 5.0	**Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization**
	Background Information Scoring **Boundary Worksheet Narrative Rating** **Field Form Quantitative Rating** **ORAM Summary Worksheet** **Wetland Categorization Worksheet** Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

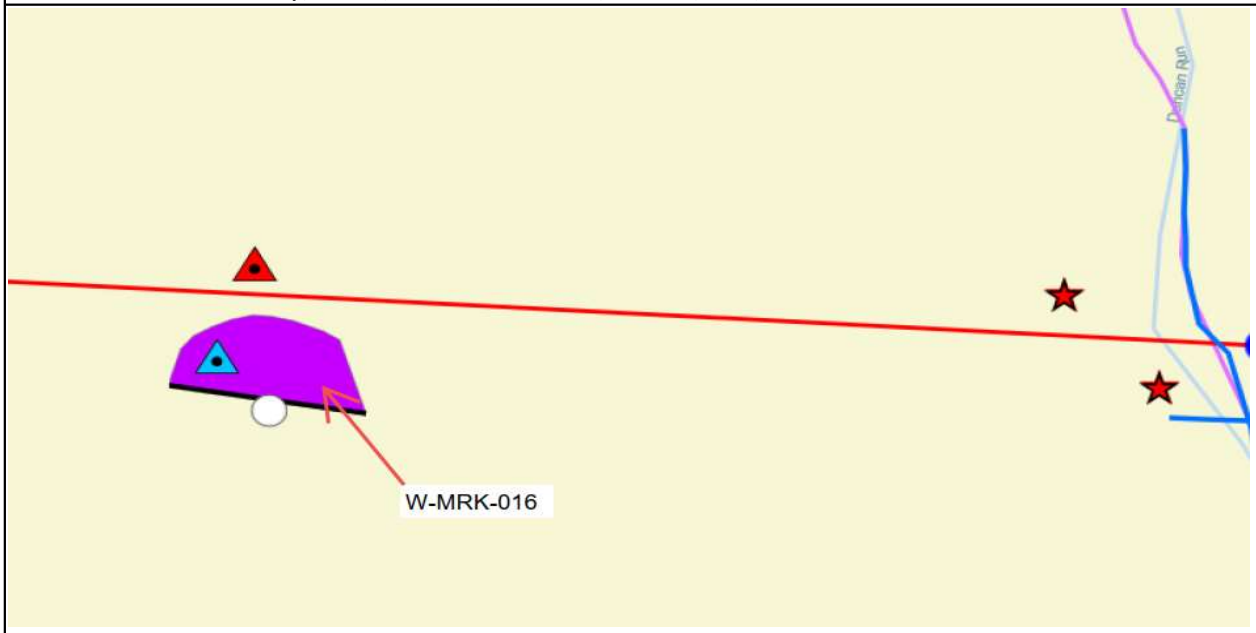
The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland may be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To properly answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx

Background Information	
Name:	**MRK, TW**
Date:	**6/27/2023**
Affiliation:	**AECOM**
Address:	**707 Grant Street, 5th Floor, Pittsburgh, PA 15219**
Phone Number:	**814-516-1130**
e-mail address:	matthew.kline@aecom.com
Name of Wetland:	**W-MRK-016**
Vegetation Communit(ies):	**PEM/PFO**
HGM Class(es):	**Depressional**

Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.



Lat/Long or UTM Coordinate:	**40.132939, -82.745182**
USGS Quad Name:	**Johnstown**
County:	**Licking**
Township:	**3N**
Section and Subsection:	**15W**
Hydrologic Unit Code:	**HUC12- 050600011307 Duncan Run**
Site Visit:	**6/27/2023**
National Wetland Inventory Map:	**See Figure 2**
Ohio Wetland Inventory Map:	**See Figure 2**
Soil Survey:	**See Figure 2**
Delineation report/map:	**See Figure 3**

Name of Wetland:	W-MRK-016		
Wetland Size (delineated acres):	0.27	Wetland Size (Estimated total acres):	1.80

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.



Comments, Narrative Discussion, Justification of Category Changes:

This PEM wetland is located in a depression at the edge of an agricultural field. Depression is collecting surface runoff which drains to the south. Wetland continues outside of the current study area.

Final score:	19	Category:	1

Wetland ID:	W-MRK-016

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. Areas with a high degree of hydrologic interaction should be scored as a single wetland. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human- induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		X
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		X

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Wetland ID:	W-MRK-016

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature and by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	*NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	*NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	*NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	*NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis* , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	*NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	*NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	*NO Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	*NO Go to Question 8b

Wetland ID:	W-MRK-016

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	*NO Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	*NO Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	*NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	*NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	*NO Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	*NO Complete Quantitative Rating

Wetland ID:	W-MRK-016

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	oak opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Wetland ID:	W-MRK-016

Site:	Vassell-Green Chapel	Rater(s):	MRK, TW	Date:	6/27/2023

Field ID:

W-MRK-016 PEM/PFO

Delineated acres:	0.27
Total acres:	1.80

Metric 1. Wetland Area (size).

2.0 (max 6 pts) | 2.0 (subtotal)

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [x] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

3.0 (max 14 pts.) | 5.0 (subtotal)

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [ ] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [x] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [ ] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [x] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [ ] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

8.0 (max 30 pts.) | 13.0 (subtotal)

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [x] Part of wetland/upland (e.g. forest), complex (1)
- [ ] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select one.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [ ] Regularly inundated/saturated (3)
- [x] Seasonally inundated (2)
- [ ] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [ ] Recovered (7)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] ditch
- [x] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] Other:

Metric 4. Habitat Alteration and Development.

8.0 (max 20 pts.) | 21.0 (subtotal)

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [ ] Recovered (3)
- [x] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [x] Fair (3)
- [ ] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [ ] Recovered (6)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] mowing
- [ ] grazing
- [ ] clearcutting
- [ ] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [x] sedimentation
- [ ] dredging
- [x] farming
- [ ] nutrient enrichment

21.0 (subtotal this page)

ORAM v. 5.0 Field Form Quantitative Rating

Wetland ID:	W-MRK-016

Site:	Vassell-Green Chapel	Rater(s):	MRK, TW	Date:	6/27/2023

Field ID:

W-MRK-016 PEM/PFO

21.0
subtotal this page

0.0 max 10 pts. | **21.0** subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Praires (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 5 Qualitative Rating (-10)

-2.0 max 20pts. | **19.0** subtotal

Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [ ] Aquatic bed
- [1] Emergent
- [ ] Shrub
- [1] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [ ] Moderately low (2)
- [x] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer Table 1 ORAM long form for list. Add or deduct points for coverage

- [x] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [ ] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [ ] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [0] Vegetated hummucks/tussucks
- [0] Coarse woody debris >15cm (6in)
- [0] Standing dead >25cm (10in) dbh
- [0] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's 1 vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's 2 vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's 3 vegetation and is of high quality

Narrative Description of Vegetation Quality

Low spp diversity and/or predominance of nonnative or low disturbance tolerant native species
Native spp are dominant component of the vegetation, mod although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generallyw/o presence of rare threatened or endangered spp to
A predominance of native species, with nonnative spp high and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

19.0 **TOTAL (Max 100 pts)**

1 **Category**

Wetland ID:	W-MRK-016

ORAM Summary Worksheet

		Circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	*NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	*NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	*NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	*NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	*NO	If yes, Category 1.
	Question 6. Bogs	YES	*NO	If yes, Category 3.
	Question 7. Fens	YES	*NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	*NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	*NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	2		
	Metric 2. Buffers and surrounding land use	3		
	Metric 3. Hydrology	8		
	Metric 4. Habitat	8		
	Metric 5. Special Wetland Communities	0		
	Metric 6. Plant communities, interspersion, microtopography	-2		
	TOTAL SCORE	19		Category based on score breakpoints

Complete Wetland Categorization Worksheet.

Wetland ID:	W-MRK-016

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	***NO**	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over- categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	***NO**	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	***NO**	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	***YES** Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	***NO**	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1- 54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	***NO** Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	***Category 1**	Category 2	Category 3	

End of Ohio Rapid Assessment Method for Wetlands.

Version 5.0	**Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization**
	Background Information Scoring **Boundary Worksheet Narrative Rating** **Field Form Quantitative Rating** **ORAM Summary Worksheet** **Wetland Categorization Worksheet** Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland may be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

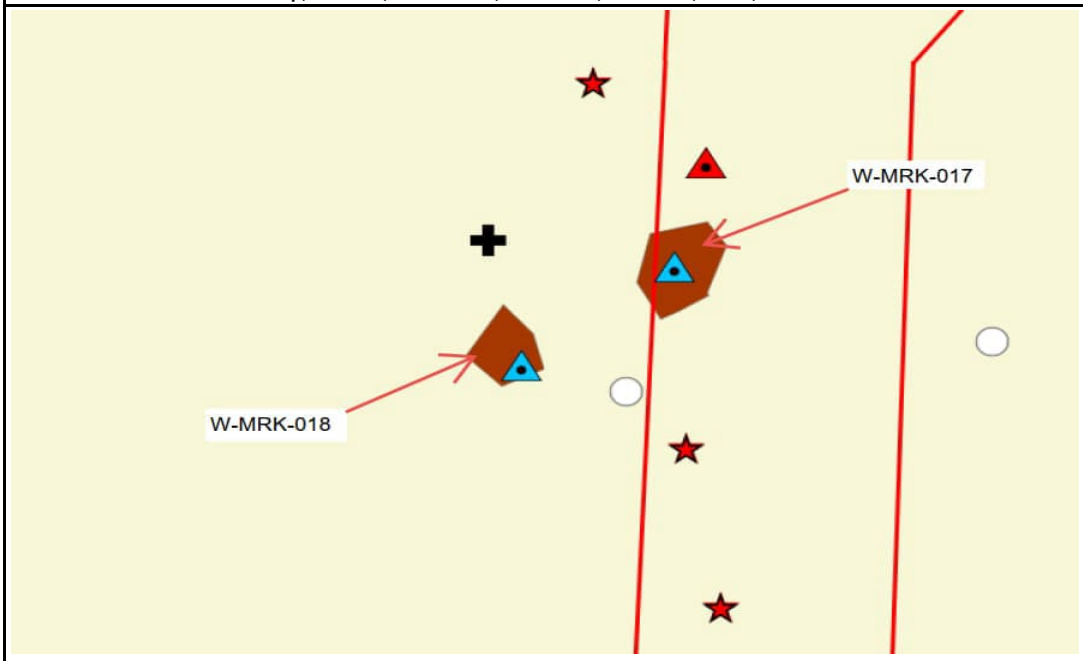
It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To properly answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx

Background Information

Name:	**MRK, TW**
Date:	**6/27/2023**
Affiliation:	**AECOM**
Address:	**707 Grant Street, 5th Floor, Pittsburgh, PA 15219**
Phone Number:	**814-516-1130**
e-mail address:	matthew.kline@aecom.com
Name of Wetland:	**W-MRK-017**
Vegetation Communit(ies):	**PFO**
HGM Class(es):	**Depressional**

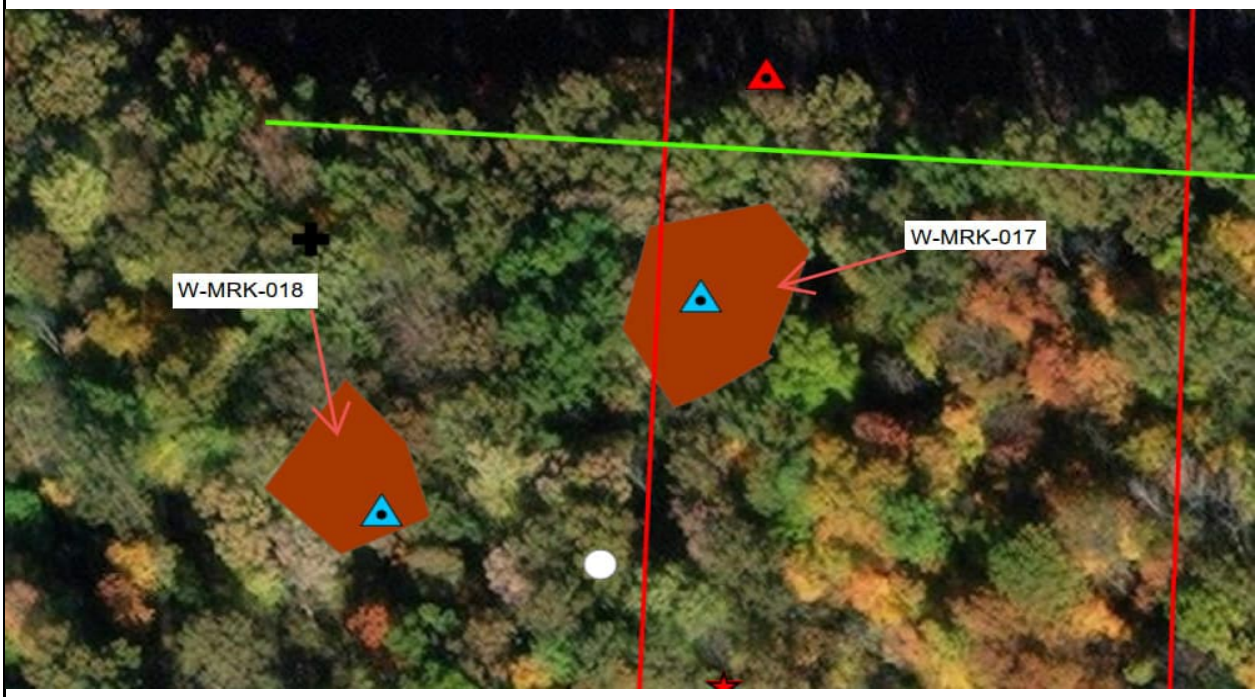
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.



Lat/Long or UTM Coordinate:	**40.140428, -82.749103**
USGS Quad Name:	**Johnstown**
County:	**Licking**
Township:	**3N**
Section and Subsection:	**15W**
Hydrologic Unit Code:	**HUC12- 050600011307 Duncan Run**
Site Visit:	**6/27/2023**
National Wetland Inventory Map:	**See Figure 2**
Ohio Wetland Inventory Map:	**See Figure 2**
Soil Survey:	**See Figure 2**
Delineation report/map:	**See Figure 3**

Name of Wetland:	W-MRK-017		
Wetland Size (delineated acres):	0.15	Wetland Size (Estimated total acres):	0.15

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.



Comments, Narrative Discussion, Justification of Category Changes:

This PFO wetland is located within a forested depression that is collecting surface runoff. Wetland is seasonally inundated with water based on water stained leaves and debris drift deposits.

Final score:	35	Category:	Modified 2

Wetland ID:	W-MRK-017

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. Areas with a high degree of hydrologic interaction should be scored as a single wetland. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human- induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.		X
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		X

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Wetland ID:	W-MRK-017

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature and by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	***NO** Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	***NO** Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	***NO** Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	***NO** Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis* , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	***NO** Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	***NO** Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	***NO** Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	***NO** Go to Question 8b

Wetland ID:	W-MRK-017

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	***NO** Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	***NO** Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	***NO** Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	***NO** Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	***NO** Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	***NO** Complete Quantitative Rating

Wetland ID:	W-MRK-017

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	oak opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Wetland ID:	W-MRK-017

Site:	AEP Vassell-Green Chapel	Rater(s):	MRK, TW	Date:	6/27/2023

Field ID:

W-MRK-017 PFO

Delineated acres:	0.15
Total acres:	0.15

Metric 1. Wetland Area (size).

1.0 / 1.0 (max 6 pts / subtotal)

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [ ] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [x] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

6.0 / 7.0 (max 14 pts. / subtotal)

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [x] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [x] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [ ] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [ ] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

12.0 / 19.0 (max 30 pts. / subtotal)

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [x] Part of wetland/upland (e.g. forest), complex (1)
- [ ] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select one.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [ ] Regularly inundated/saturated (3)
- [x] Seasonally inundated (2)
- [ ] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [x] Recovered (7)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] ditch
- [x] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] Other:

Metric 4. Habitat Alteration and Development.

12.0 / 31.0 (max 20 pts. / subtotal)

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [x] Recovered (3)
- [ ] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [x] Fair (3)
- [ ] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [x] Recovered (6)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] mowing
- [ ] grazing
- [ ] clearcutting
- [x] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [x] sedimentation
- [ ] dredging
- [x] farming
- [ ] nutrient enrichment

31.0 (subtotal this page)

ORAM v. 5.0 Field Form Quantitative Rating

Wetland ID:	W-MRK-017

Site:	AEP Vassell-Green Chapel	Rater(s):	MRK, TW	Date:	6/27/2023

Field ID:

W-MRK-017 PFO

31.0 subtotal this page

0.0 max 10 pts. | **31.0** subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Praires (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 5 Qualitative Rating (-10)

4.0 max 20pts. | **35.0** subtotal

Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- [ ] Aquatic bed
- [ ] Emergent
- [ ] Shrub
- [1] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

6b. horizontal (plan view) Interspersion.

Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [ ] Moderately low (2)
- [ ] Low (1)
- [x] None (0)

6c. Coverage of invasive plants. Refer

Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [ ] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [x] Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- [0] Vegetated hummucks/tussucks
- [1] Coarse woody debris >15cm (6in)
- [1] Standing dead >25cm (10in) dbh
- [0] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's 1 vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's 2 vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's 3 vegetation and is of high quality

Narrative Description of Vegetation Quality

Low spp diversity and/or predominance of nonnative or low disturbance tolerant native species
Native spp are dominant component of the vegetation, mod although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generallyw/o presence of rare threatened or endangered spp to
A predominance of native species, with nonnative spp high and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

35.0 **TOTAL (Max 100 pts)**

Modified 2 **Category**

Wetland ID:	W-MRK-017

ORAM Summary Worksheet

		Circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	*NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	*NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	*NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	*NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	*NO	If yes, Category 1.
	Question 6. Bogs	YES	*NO	If yes, Category 3.
	Question 7. Fens	YES	*NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	*NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	*NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	**1**		
	Metric 2. Buffers and surrounding land use	**6**		
	Metric 3. Hydrology	**12**		
	Metric 4. Habitat	**12**		
	Metric 5. Special Wetland Communities	**0**		
	Metric 6. Plant communities, interspersion, microtopography	**4**		
	TOTAL SCORE	**35**		Category based on score breakpoints

Complete Wetland Categorization Worksheet.

Wetland ID:	W-MRK-017

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	***NO**	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over- categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	***NO**	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	***NO**	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES Wetland is assigned to the appropriate category based on the scoring range	***NO**	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	***YES** Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1- 54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	***NO** Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	Category 1	***Category 2**	Category 3	

End of Ohio Rapid Assessment Method for Wetlands.

Version 5.0	**Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization**
	Background Information Scoring **Boundary Worksheet Narrative Rating** **Field Form Quantitative Rating** **ORAM Summary Worksheet** **Wetland Categorization Worksheet** Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland may be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To properly answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx

Background Information	
Name:	**MRK, KRS**
Date:	**9/12/2023**
Affiliation:	**AECOM**
Address:	**707 Grant Street, 5th Floor, Pittsburgh, PA 15219**
Phone Number:	**814-516-1130**
e-mail address:	matthew.kline@aecom.com
Name of Wetland:	**W-MRK-020**
Vegetation Communit(ies):	**PSS/PFO**
HGM Class(es):	**DEPRESSION**

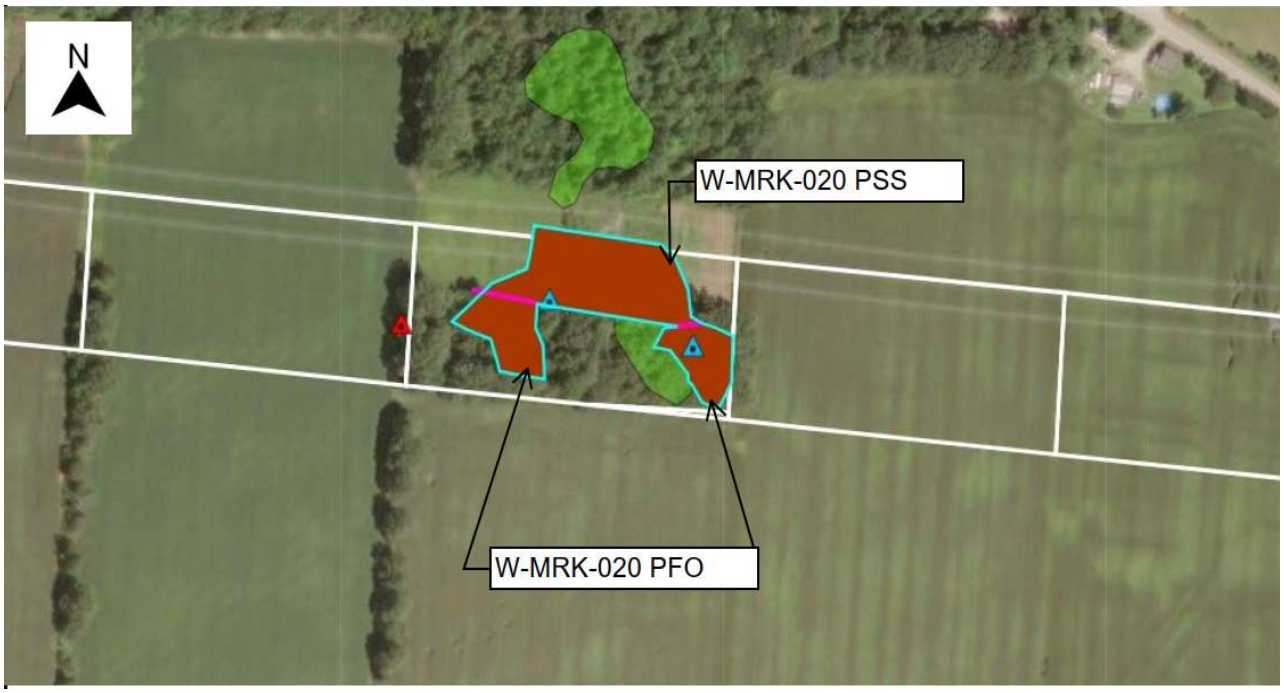
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.



Lat/Long or UTM Coordinate:	**PFO: 40.22163, -82.81790 and PSS: 40.22187, -82.81892**
USGS Quad Name:	**Sunbury**
County:	**Delaware**
Township:	**Trenton**
Section and Subsection:	**T4N R16W**
Hydrologic Unit Code:	**050600011502 - Hoover Reservoir-Big Walnut Creek**
Site Visit:	**9/12/2023**
National Wetland Inventory Map:	**See Figure 2**
Ohio Wetland Inventory Map:	**See Figure 2**
Soil Survey:	**See Figure 2**
Delineation report/map:	**See Figure 3**

Name of Wetland:	W-MRK-020		
Wetland Size (delineated acres):	1.90	Wetland Size (Estimated total acres):	2.50

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.



Comments, Narrative Discussion, Justification of Category Changes:

PSS/PFO wetland complex is located within a depression on the existing transmission line right-of-way. Surface water runoff drains off the ROW and into a forested area. Wetland boundary follows edge of depression.

Final score:	35	Category:	Modified 2

Wetland ID:	W-MRK-020

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. Areas with a high degree of hydrologic interaction should be scored as a single wetland. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human- induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	X	
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		X

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Wetland ID:	W-MRK-020

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature and by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	***NO** Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	***NO** Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	***NO** Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	***NO** Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis* , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	***NO** Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	***NO** Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	***NO** Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	***NO** Go to Question 8b

Wetland ID:	W-MRK-020

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	***NO** Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	***NO** Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	***NO** Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	***NO** Complete Quantitative Rating

Wetland ID:	W-MRK-020

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	oak opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Wetland ID:	W-MRK-020

Site:	Vassell-Green Chapel	Rater(s):	MRK, KRS	Date:	9/12/2023

Field ID:

W-MRK-020 PSS/PFO

Delineated acres:	1.90
Total acres:	2.50

Metric 1. Wetland Area (size).

2.0 (max 6 pts) | 2.0 (subtotal)

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [x] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

4.0 (max 14 pts.) | 6.0 (subtotal)

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [x] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [ ] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [x] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [ ] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

11.0 (max 30 pts.) | 17.0 (subtotal)

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [ ] Part of wetland/upland (e.g. forest), complex (1)
- [x] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select one.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [ ] Regularly inundated/saturated (3)
- [ ] Seasonally inundated (2)
- [x] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [x] Recovered (7)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] ditch
- [ ] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [x] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] Other:

Metric 4. Habitat Alteration and Development.

9.0 (max 20 pts.) | 26.0 (subtotal)

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [x] Recovered (3)
- [ ] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [x] Fair (3)
- [ ] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [ ] Recovered (6)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [x] mowing
- [ ] grazing
- [x] clearcutting
- [x] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [x] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [ ] sedimentation
- [ ] dredging
- [x] farming
- [ ] nutrient enrichment

26.0 (subtotal this page)

ORAM v. 5.0 Field Form Quantitative Rating

Wetland ID:	W-MRK-020

Site:	Vassell-Green Chapel	Rater(s):	MRK, KRS	Date:	9/12/2023

Field ID:
W-MRK-020 PSS/PFO

26.0
subtotal this page

0.0 max 10 pts. **26.0** subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Praires (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 5 Qualitative Rating (-10)

9.0 max 20pts. **35.0** subtotal

Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [ ] Aquatic bed
- [1] Emergent
- [1] Shrub
- [1] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [x] Moderate (3)
- [ ] Moderately low (2)
- [ ] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [ ] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [x] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [0] Vegetated hummucks/tussucks
- [1] Coarse woody debris >15cm (6in)
- [1] Standing dead >25cm (10in) dbh
- [0] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's 1 vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's 2 vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's 3 vegetation and is of high quality

Narrative Description of Vegetation Quality

Low spp diversity and/or predominance of nonnative or low disturbance tolerant native species
Native spp are dominant component of the vegetation, mod although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generallyw/o presence of rare threatened or endangered spp to
A predominance of native species, with nonnative spp high and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

35.0 **TOTAL (Max 100 pts)**
Modified 2 **Category**

Wetland ID:	W-MRK-020

ORAM Summary Worksheet

		Circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	*NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	*NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	*NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	*NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	*NO	If yes, Category 1.
	Question 6. Bogs	YES	*NO	If yes, Category 3.
	Question 7. Fens	YES	*NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	*NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	*NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	2		
	Metric 2. Buffers and surrounding land use	4		
	Metric 3. Hydrology	11		
	Metric 4. Habitat	9		
	Metric 5. Special Wetland Communities	0		
	Metric 6. Plant communities, interspersion, microtopography	9		
	TOTAL SCORE	35		Category based on score breakpoints

Complete Wetland Categorization Worksheet.

Wetland ID:	W-MRK-020

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	***NO**	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over- categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	***NO**	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	***NO**	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES Wetland is assigned to the appropriate category based on the scoring range	***NO**	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	***YES** Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1- 54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	Category 1	***Category 2**	Category 3	

End of Ohio Rapid Assessment Method for Wetlands.

Version 5.0	**Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization**
	Background Information Scoring **Boundary Worksheet Narrative Rating** **Field Form Quantitative Rating** **ORAM Summary Worksheet** **Wetland Categorization Worksheet** Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland may be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

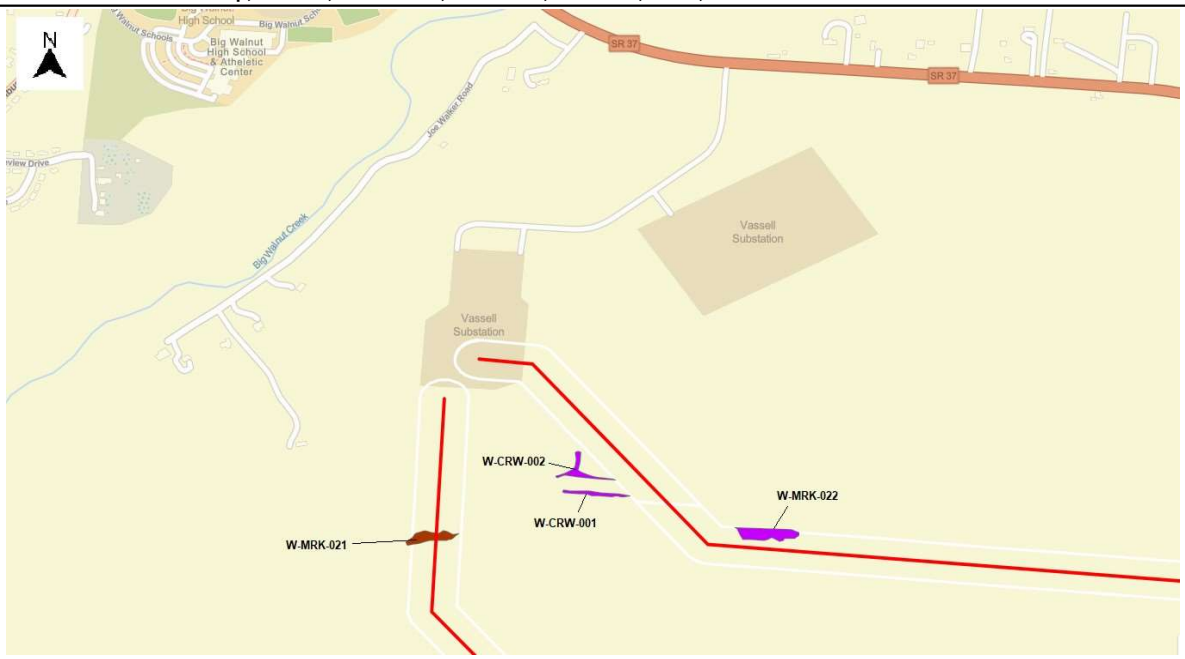
It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To properly answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx

Background Information

Name:	**MRK, KRS**
Date:	**9/11/2023**
Affiliation:	**AECOM**
Address:	**707 Grant Street, 5th Floor, Pittsburgh, PA 15219**
Phone Number:	**814-516-1130**
e-mail address:	matthew.kline@aecom.com
Name of Wetland:	**W-MRK-022**
Vegetation Communit(ies):	**PEM**
HGM Class(es):	**DEPRESSION**

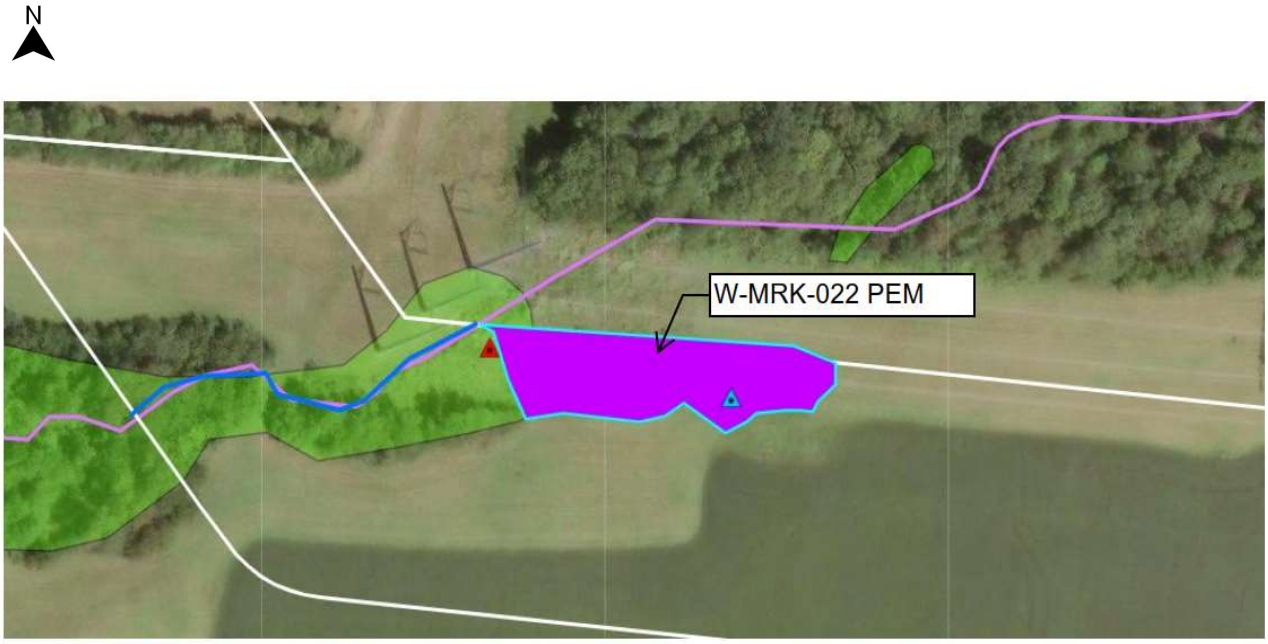
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.



Lat/Long or UTM Coordinate:	**40.22407, -82.84601**
USGS Quad Name:	**Sunbury**
County:	**Delaware**
Township:	**Trenton**
Section and Subsection:	**T4N R16W**
Hydrologic Unit Code:	**050600011308 - Prairie Run-Big Walnut Creek**
Site Visit:	**9/11/2023**
National Wetland Inventory Map:	**See Figure 2**
Ohio Wetland Inventory Map:	**See Figure 2**
Soil Survey:	**See Figure 2**
Delineation report/map:	**See Figure 3**

Name of Wetland:	W-MRK-022		
Wetland Size (delineated acres):	0.68	Wetland Size (Estimated total acres):	2.00

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.



Comments, Narrative Discussion, Justification of Category Changes:

This PEM wetland is located within a depression on the existing transmission line right-of-way. Depression is receiving surface runoff from the surrounding are and is also seasonally flooded by a watecourse.

Final score:	15	Category:	1

Wetland ID:	W-MRK-022

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. Areas with a high degree of hydrologic interaction should be scored as a single wetland. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human- induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	X	
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		X

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Wetland ID:	W-MRK-022

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature and by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	***NO** Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	***NO** Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	***NO** Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	***NO** Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis* , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	***NO** Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	***NO** Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	***NO** Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	***NO** Go to Question 8b

Wetland ID:	W-MRK-022

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	***NO** Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	***NO** Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	***NO** Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	***NO** Complete Quantitative Rating

Wetland ID:	W-MRK-022

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	oak opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Wetland ID:	W-MRK-022

Site:	Vassell-Green Chapel	Rater(s):	MRK, KRS	Date:	9/11/2023

Field ID:

W-MRK-022 PEM

Delineated acres:	0.68
Total acres:	2.00

Metric 1. Wetland Area (size).

2.0 (max 6 pts) | 2.0 (subtotal)

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [x] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

3.0 (max 14 pts.) | 5.0 (subtotal)

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [ ] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [x] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [ ] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [x] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [ ] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

7.0 (max 30 pts.) | 12.0 (subtotal)

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [ ] Part of wetland/upland (e.g. forest), complex (1)
- [x] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select one.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [ ] Regularly inundated/saturated (3)
- [ ] Seasonally inundated (2)
- [x] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [ ] Recovered (7)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] ditch
- [ ] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] Other:

Metric 4. Habitat Alteration and Development.

7.0 (max 20 pts.) | 19.0 (subtotal)

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [x] Recovered (3)
- [ ] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [ ] Fair (3)
- [ ] Poor to fair (2)
- [x] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [ ] Recovered (6)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [x] mowing
- [ ] grazing
- [x] clearcutting
- [ ] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [x] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [ ] sedimentation
- [ ] dredging
- [x] farming
- [ ] nutrient enrichment

19.0 (subtotal this page)

ORAM v. 5.0 Field Form Quantitative Rating

Wetland ID:	W-MRK-022

Site:	Vassell-Green Chapel	Rater(s):	MRK, KRS	Date:	9/11/2023

Field ID:

W-MRK-022 PEM

19.0
subtotal this page

0.0 max 10 pts. **19.0** subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Praires (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 5 Qualitative Rating (-10)

-4.0 max 20pts. **15.0** subtotal

Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- [ ] Aquatic bed
- [1] Emergent
- [ ] Shrub
- [ ] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

6b. horizontal (plan view) Interspersion.

Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [ ] Moderately low (2)
- [ ] Low (1)
- [x] None (0)

6c. Coverage of invasive plants. Refer

Table 1 ORAM long form for list. Add or deduct points for coverage

- [x] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [ ] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [ ] Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- [0] Vegetated hummucks/tussucks
- [0] Coarse woody debris >15cm (6in)
- [0] Standing dead >25cm (10in) dbh
- [0] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's 1 vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's 2 vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's 3 vegetation and is of high quality

Narrative Description of Vegetation Quality

Low spp diversity and/or predominance of nonnative or low disturbance tolerant native species
Native spp are dominant component of the vegetation, mod although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generallyw/o presence of rare threatened or endangered spp to
A predominance of native species, with nonnative spp high and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

15.0 **TOTAL (Max 100 pts)**

1 **Category**

Wetland ID:	W-MRK-022

ORAM Summary Worksheet

		Circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	*NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	*NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	*NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	*NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	*NO	If yes, Category 1.
	Question 6. Bogs	YES	*NO	If yes, Category 3.
	Question 7. Fens	YES	*NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	*NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	*NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	2		
	Metric 2. Buffers and surrounding land use	3		
	Metric 3. Hydrology	7		
	Metric 4. Habitat	7		
	Metric 5. Special Wetland Communities	0		
	Metric 6. Plant communities, interspersion, microtopography	-4		
	TOTAL SCORE	15		Category based on score breakpoints

Complete Wetland Categorization Worksheet.

Wetland ID:	W-MRK-022

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	***NO**	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over- categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	***NO**	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	***NO**	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	***YES** Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	***NO**	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1- 54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	***Category 1**	Category 2	Category 3	

End of Ohio Rapid Assessment Method for Wetlands.

Version 5.0	**Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization**
	Background Information Scoring **Boundary Worksheet Narrative Rating** **Field Form Quantitative Rating** **ORAM Summary Worksheet** **Wetland Categorization Worksheet** Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland may be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

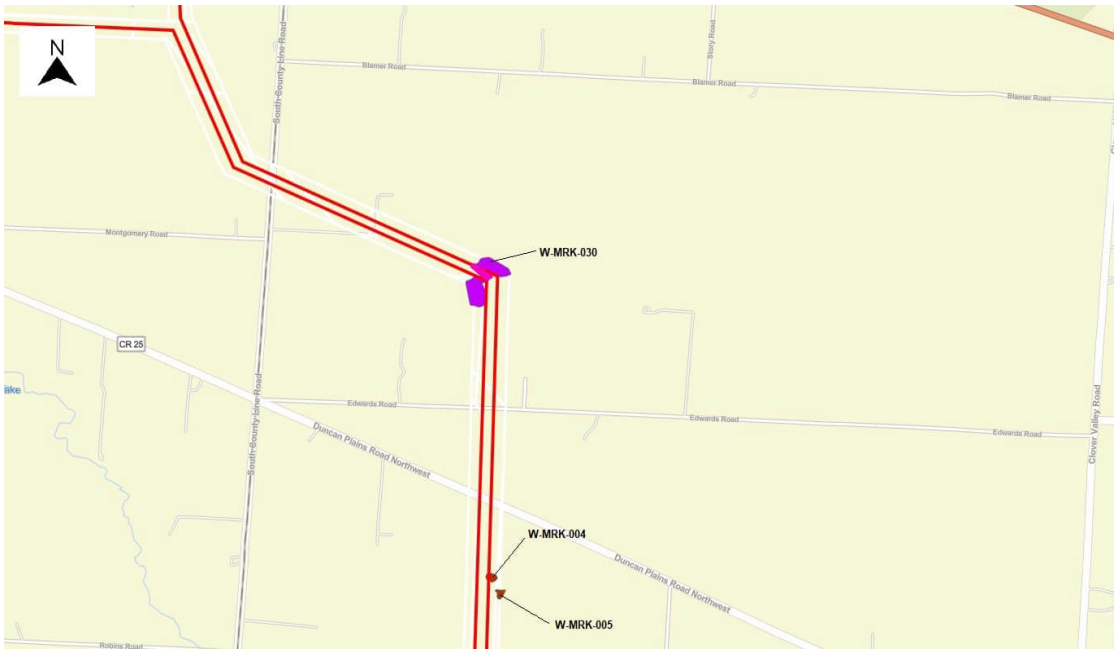
It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To properly answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx

Background Information

Name:	**MRK, KRS**
Date:	**9/13/2023**
Affiliation:	**AECOM**
Address:	**707 Grant Street, 5th Floor, Pittsburgh, PA 15219**
Phone Number:	**814-516-1130**
e-mail address:	matthew.kline@aecom.com
Name of Wetland:	**W-MRK-030**
Vegetation Communit(ies):	**PEM/PFO**
HGM Class(es):	**DEPRESSION**

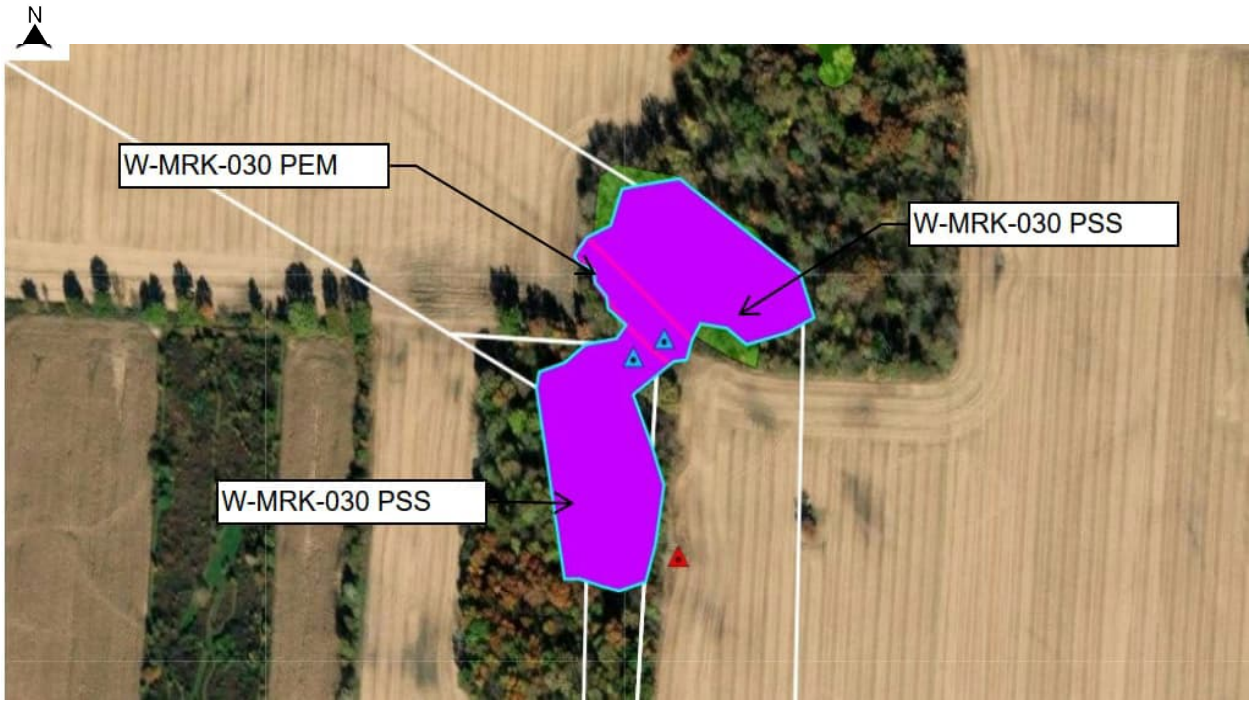
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.



Lat/Long or UTM Coordinate:	**PEM: 40.16174, -82.74871 and PFO: 40.16161, -82.74894**
USGS Quad Name:	**Johnstown**
County:	**Licking**
Township:	**Monroe**
Section and Subsection:	**S15 T3N R15W**
Hydrologic Unit Code:	**050600011307 - Duncan Run**
Site Visit:	**9/13/2023**
National Wetland Inventory Map:	**See Figure 2**
Ohio Wetland Inventory Map:	**See Figure 2**
Soil Survey:	**See Figure 2**
Delineation report/map:	**See Figure 3**

Name of Wetland:	W-MRK-030		
Wetland Size (delineated acres):	4.90	Wetland Size (Estimated total acres):	<10 acres

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.



Comments, Narrative Discussion, Justification of Category Changes:

This PFO section of a PEM/PFO wetland complex is located in a depression surrounding a PEM section. Surface runoff drains out of the PFO section to the south, flows into the PEM, and flows north into another PFO section.

Final score:	45	Category:	2

Wetland ID:	W-MRK-030

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. Areas with a high degree of hydrologic interaction should be scored as a single wetland. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human- induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	X	
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		X

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Wetland ID:	W-MRK-030

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature and by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	***NO** Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	***NO** Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	***NO** Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	***NO** Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis* , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	***NO** Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	***NO** Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	***NO** Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	***NO** Go to Question 8b

Wetland ID:	W-MRK-030

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	***NO** Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	***NO** Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	***NO** Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	***NO** Complete Quantitative Rating

Wetland ID:	W-MRK-030

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	oak opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Wetland ID:	W-MRK-030

Site:	Vassell-Green Chapel	Rater(s):	MRK, KRS	Date:	9/13/2023

Field ID:

W-MRK-030 PEM/PFO

Delineated acres:	4.90
Total acres:	<10 acres

Metric 1. Wetland Area (size).

3.0 (max 6 pts) | 3.0 (subtotal)

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [x] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [ ] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

6.0 (max 14 pts.) | 9.0 (subtotal)

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [x] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [x] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [ ] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [ ] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

12.0 (max 30 pts.) | 21.0 (subtotal)

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [ ] Part of wetland/upland (e.g. forest), complex (1)
- [x] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select one.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [ ] Regularly inundated/saturated (3)
- [x] Seasonally inundated (2)
- [ ] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [x] Recovered (7)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] ditch
- [ ] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [x] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] Other:

Metric 4. Habitat Alteration and Development.

12.0 (max 20 pts.) | 33.0 (subtotal)

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [x] Recovered (3)
- [ ] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [x] Fair (3)
- [ ] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [x] Recovered (6)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [x] mowing
- [ ] grazing
- [x] clearcutting
- [ ] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [x] sedimentation
- [ ] dredging
- [x] farming
- [ ] nutrient enrichment

33.0 (subtotal this page)

ORAM v. 5.0 Field Form Quantitative Rating

Wetland ID:	W-MRK-030

Site:	Vassell-Green Chapel	Rater(s):	MRK, KRS	Date:	9/13/2023

Field ID:

W-MRK-030 PEM/PFO

33.0 subtotal this page

0.0 max 10 pts. **33.0** subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Praires (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 5 Qualitative Rating (-10)

12.0 max 20pts. **45.0** subtotal

Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- [ ] Aquatic bed
- [1] Emergent
- [ ] Shrub
- [2] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

6b. horizontal (plan view) Interspersion.

Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [x] Moderate (3)
- [ ] Moderately low (2)
- [ ] Low (1)
- [ ] None (0)

6c. Coverage of invasive plants. Refer

Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [ ] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [x] Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- [0] Vegetated hummucks/tussucks
- [2] Coarse woody debris >15cm (6in)
- [1] Standing dead >25cm (10in) dbh
- [2] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's 1 vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's 2 vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's 3 vegetation and is of high quality

Narrative Description of Vegetation Quality

Low spp diversity and/or predominance of nonnative or low disturbance tolerant native species
Native spp are dominant component of the vegetation, mod although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generallyw/o presence of rare threatened or endangered spp to
A predominance of native species, with nonnative spp high and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

45.0 **TOTAL (Max 100 pts)**

2 **Category**

Wetland ID:	W-MRK-030

ORAM Summary Worksheet

		Circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	*NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	*NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	*NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	*NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	*NO	If yes, Category 1.
	Question 6. Bogs	YES	*NO	If yes, Category 3.
	Question 7. Fens	YES	*NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	*NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	*NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	3		
	Metric 2. Buffers and surrounding land use	6		
	Metric 3. Hydrology	12		
	Metric 4. Habitat	12		
	Metric 5. Special Wetland Communities	0		
	Metric 6. Plant communities, interspersion, microtopography	12		
	TOTAL SCORE	45		Category based on score breakpoints

Complete Wetland Categorization Worksheet.

Wetland ID:	W-MRK-030

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	***NO**	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over- categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	***NO**	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	***NO**	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	***YES** Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	***NO**	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1- 54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	Category 1	***Category 2**	Category 3	

End of Ohio Rapid Assessment Method for Wetlands.

Version 5.0	**Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization**
	Background Information Scoring **Boundary Worksheet Narrative Rating** **Field Form Quantitative Rating** **ORAM Summary Worksheet** **Wetland Categorization Worksheet** Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland may be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

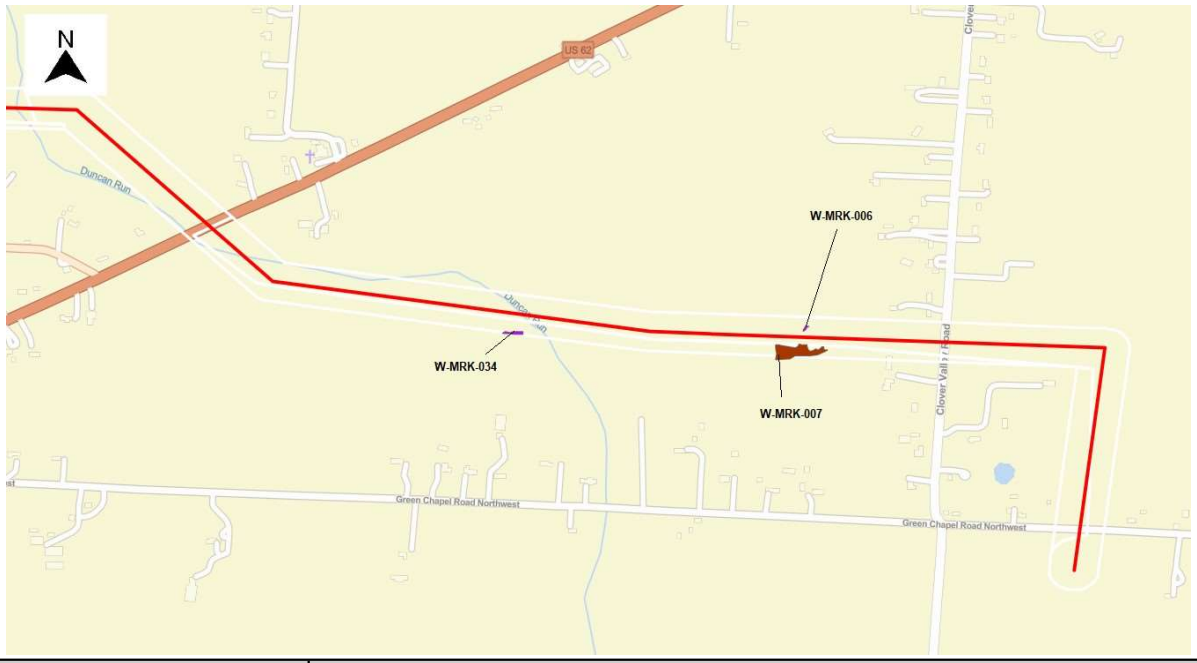
It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To properly answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx

Background Information

Name:	**MRK, KRS**
Date:	**9/15/2023**
Affiliation:	**AECOM**
Address:	**707 Grant Street, 5th Floor, Pittsburgh, PA 15219**
Phone Number:	**814-516-1130**
e-mail address:	matthew.kline@aecom.com
Name of Wetland:	**W-MRK-034**
Vegetation Communit(ies):	**PEM**
HGM Class(es):	**DEPRESSION**

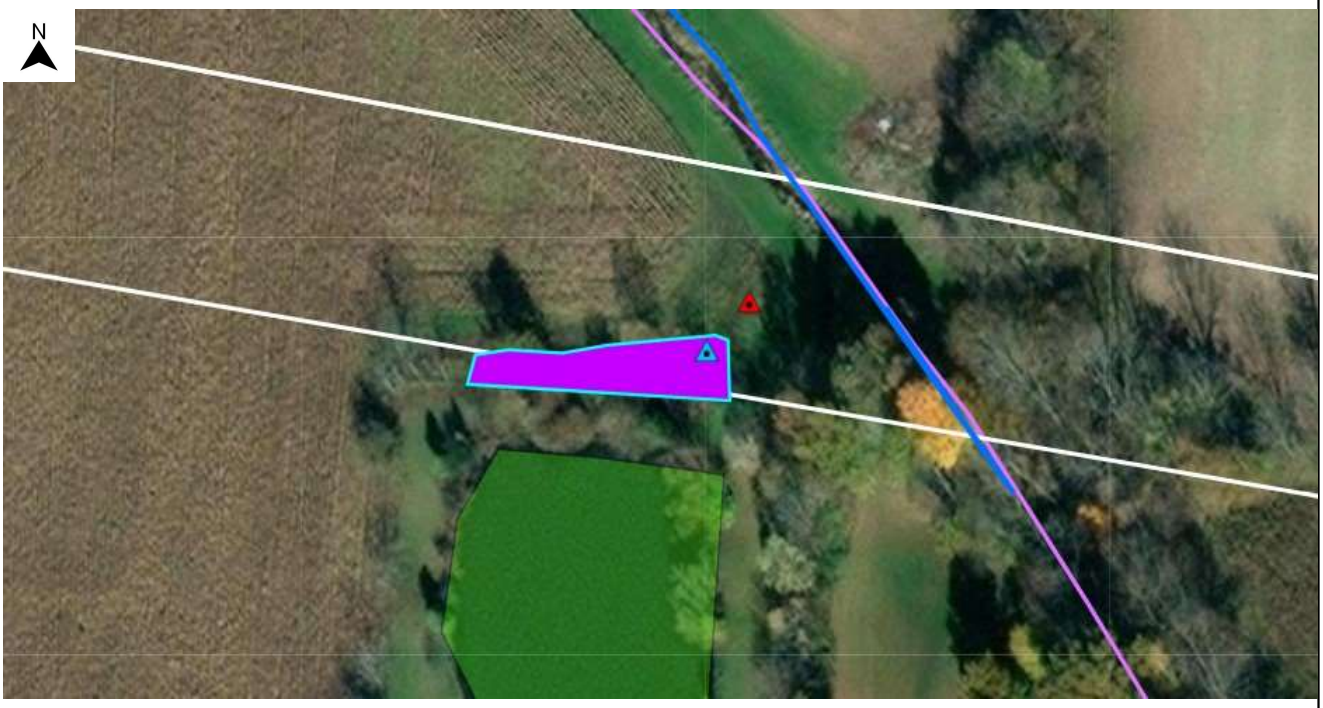
Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.



Lat/Long or UTM Coordinate:	**40.12834, -82.73116**
USGS Quad Name:	**Johnstown**
County:	**Licking**
Township:	**Monroe**
Section and Subsection:	**S24 T3N R15W**
Hydrologic Unit Code:	**050600011307 - Duncan Run**
Site Visit:	**9/15/2023**
National Wetland Inventory Map:	**See Figure 2**
Ohio Wetland Inventory Map:	**See Figure 2**
Soil Survey:	**See Figure 2**
Delineation report/map:	**See Figure 3**

Name of Wetland:	W-MRK-034		
Wetland Size (delineated acres):	0.05	Wetland Size (Estimated total acres):	0.05

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.



Comments, Narrative Discussion, Justification of Category Changes:

This PEM wetland is located in a small depression at the edge of an agricultural field. A pond located just outside of the study area may have a leaking berm that contributes to the hydrology. The wetland boundary follows edge of depression.

Final score:	14	Category:	1

Wetland ID:	W-MRK-034

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. Areas with a high degree of hydrologic interaction should be scored as a single wetland. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human- induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	X	
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		X

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Wetland ID:	W-MRK-034

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature and by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	*NO Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	*NO Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	*NO Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	*NO Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis* , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	*NO Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	*NO Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	*NO Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	*NO Go to Question 8b

Wetland ID:	W-MRK-034

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	***NO** Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	***NO** Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	***NO** Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	***NO** Complete Quantitative Rating

Wetland ID:	W-MRK-034

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	oak opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Wetland ID:	W-MRK-034

Site:	Vassell-Green Chapel	Rater(s):	MRK, KRS	Date:	9/15/2023

Field ID:

W-MRK-034 PEM

Delineated acres:	0.05
Total acres:	0.05

Metric 1. Wetland Area (size).

0.0 (max 6 pts) | 0.0 (subtotal)

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [ ] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [ ] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [x] <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

1.0 (max 14 pts.) | 1.0 (subtotal)

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [ ] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [x] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [ ] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [ ] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [x] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

7.0 (max 30 pts.) | 8.0 (subtotal)

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [ ] Part of wetland/upland (e.g. forest), complex (1)
- [x] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select one.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [ ] Regularly inundated/saturated (3)
- [ ] Seasonally inundated (2)
- [x] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [ ] Recovered (7)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] ditch
- [ ] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [x] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] Other:

Metric 4. Habitat Alteration and Development.

6.0 (max 20 pts.) | 14.0 (subtotal)

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [ ] Recovered (3)
- [x] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [ ] Fair (3)
- [ ] Poor to fair (2)
- [x] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [ ] Recovered (6)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [x] mowing
- [ ] grazing
- [x] clearcutting
- [ ] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [x] sedimentation
- [ ] dredging
- [x] farming
- [ ] nutrient enrichment

14.0 (subtotal this page)

ORAM v. 5.0 Field Form Quantitative Rating

Wetland ID:	W-MRK-034

Site:	Vassell-Green Chapel	Rater(s):	MRK, KRS	Date:	9/15/2023

Field ID:

W-MRK-034 PEM

14.0
subtotal this page

0.0 max 10 pts. **14.0** subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Praires (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 5 Qualitative Rating (-10)

0.0 max 20pts. **14.0** subtotal

Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.

Score all present using 0 to 3 scale.

- [ ] Aquatic bed
- [1] Emergent
- [ ] Shrub
- [ ] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

6b. horizontal (plan view) Interspersion.

Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [ ] Moderately low (2)
- [ ] Low (1)
- [x] None (0)

6c. Coverage of invasive plants. Refer

Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [x] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [ ] Absent (1)

6d. Microtopography.

Score all present using 0 to 3 scale.

- [0] Vegetated hummucks/tussucks
- [0] Coarse woody debris >15cm (6in)
- [0] Standing dead >25cm (10in) dbh
- [0] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's 1 vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's 2 vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's 3 vegetation and is of high quality

Narrative Description of Vegetation Quality

Low spp diversity and/or predominance of nonnative or low disturbance tolerant native species
Native spp are dominant component of the vegetation, mod although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generallyw/o presence of rare threatened or endangered spp to
A predominance of native species, with nonnative spp high and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

14.0	**TOTAL (Max 100 pts)**
1	**Category**

Wetland ID:	W-MRK-034

ORAM Summary Worksheet

		Circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	*NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	*NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	*NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	*NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	*NO	If yes, Category 1.
	Question 6. Bogs	YES	*NO	If yes, Category 3.
	Question 7. Fens	YES	*NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	*NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	*NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	0		
	Metric 2. Buffers and surrounding land use	1		
	Metric 3. Hydrology	7		
	Metric 4. Habitat	6		
	Metric 5. Special Wetland Communities	0		
	Metric 6. Plant communities, interspersion, microtopography	0		
	TOTAL SCORE	14		Category based on score breakpoints

Complete Wetland Categorization Worksheet.

Wetland ID:	W-MRK-034

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	***NO**	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over- categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	***NO**	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	***NO**	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	***YES** Wetland is assigned to the appropriate category based on the scoring range	NO	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	YES Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	***NO**	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1- 54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	***Category 1**	Category 2	Category 3	

End of Ohio Rapid Assessment Method for Wetlands.

Version 5.0	**Ohio Rapid Assessment Method for Wetlands 10 Page Form for Wetland Categorization**
	Background Information Scoring **Boundary Worksheet Narrative Rating** **Field Form Quantitative Rating** **ORAM Summary Worksheet** **Wetland Categorization Worksheet** Ohio EPA, Division of Surface Water Final: February 1, 2001

Instructions

The investigator is *STRONGLY URGED* to read the Manual for Using the Ohio Rapid Assessment Method for Wetlands for further elaboration and discussion of the questions below prior to using the rating forms.

The Narrative Rating is designed to categorize a wetland or to provide alerts to the Rater based on the presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as presence or possible presence of threatened or endangered species. The presence or proximity of such species is often an indicator of the quality and lack of disturbance of the wetland being evaluated. In addition, it is designed to categorize certain wetlands as very low quality (Category 1) or very high quality (Category 3) regardless of the wetland's score on the Quantitative Rating. In addition, the Narrative Rating also alerts the investigator that a particular wetland may be a Category 3 wetland, again, regardless of the wetland's score on the Quantitative Rating.

It is *VERY IMPORTANT* to properly and thoroughly answer each of the questions in the ORAM in order to properly categorize a wetland. To properly answer all the questions, the boundaries of the wetland being assessed must be correctly identified. Refer to Scoring Boundary worksheet and the User's Manual for a discussion of how to determine the "scoring boundaries." In some instances, the scoring boundaries may differ from the "jurisdictional boundaries."

Refer to the most recent ORAM Score Calibration Report for the scoring breakpoints between wetland categories. The most recent version of this document is posted on Ohio EPA's Division of Surface Water web page at: http://www.epa.ohio.gov/dsw/wetlands/WetlandEcologySection.aspx

Background Information

Name:	**MRK, KRS**
Date:	**9/26/2023**
Affiliation:	**AECOM**
Address:	**707 Grant Street, 5th Floor, Pittsburgh, PA 15219**
Phone Number:	**814-516-1130**
e-mail address:	matthew.kline@aecom.com
Name of Wetland:	**W-MRK-035**
Vegetation Communit(ies):	**PFO**
HGM Class(es):	**DEPRESSION**

Location of Wetland: include map, address, north arrow, landmarks, distances, roads, etc.



Lat/Long or UTM Coordinate:	**40.19245, -82.78172**
USGS Quad Name:	**Sunbury**
County:	**Delaware**
Township:	**Harlem**
Section and Subsection:	**T3N R16W**
Hydrologic Unit Code:	**050600011502 - Hoover Reservoir-Big Walnut Creek**
Site Visit:	**9/26/2023**
National Wetland Inventory Map:	**See Figure 2**
Ohio Wetland Inventory Map:	**See Figure 2**
Soil Survey:	**See Figure 2**
Delineation report/map:	**See Figure 3**

Name of Wetland:	W-MRK-035		
Wetland Size (delineated acres):	0.27	Wetland Size (Estimated total acres):	0.27

Sketch: Include north arrow, relationship with other surface waters, vegetation zones, etc.



Comments, Narrative Discussion, Justification of Category Changes:

This PFO wetland is located within a forested depression that is collecting surface runoff from the surrounding area. Water drains to an agricultural swale outside of the study area. The wetland boundary follows edge of depression.

Final score:	30	Category:	1 or 2 Gray Zone

Wetland ID:	W-MRK-035

Scoring Boundary Worksheet

INSTRUCTIONS. The initial step in completing the ORAM is to identify the "scoring boundaries" of the wetland being rated. In many instances this determination will be relatively easy and the scoring boundaries will coincide with the "jurisdictional boundaries." For example, the scoring boundary of an isolated cattail marsh located in the middle of a farm field will likely be the same as that wetland's jurisdictional boundaries. In other instances, however, the scoring boundary will not be as easily determined. Wetlands that are small or isolated from other surface waters often form large contiguous areas or heterogeneous complexes of wetland and upland. In separating wetlands for scoring purposes, the hydrologic regime of the wetland is the main criterion that should be used. Boundaries between contiguous or connected wetlands should be established where the volume, flow, or velocity of water moving through the wetland changes significantly. Areas with a high degree of hydrologic interaction should be scored as a single wetland. In determining a wetland's scoring boundaries, use the guidelines in the ORAM Manual Section 5.0. In certain instances, it may be difficult to establish the scoring boundary for the wetland being rated. These problem situations include wetlands that form a patchwork on the landscape, wetlands divided by artificial boundaries like property fences, roads, or railroad embankments, wetlands that are contiguous with streams, lakes, or rivers, and estuarine or coastal wetlands. These situations are discussed below, however, it is recommended that Rater contact Ohio EPA, Division of Surface Water, 401/Wetlands Section if there are additional questions or a need for further clarification of the appropriate scoring boundaries of a particular wetland.

#	Steps in properly establishing scoring boundaries	done?	not applicable
Step 1	Identify the wetland area of interest. This may be the site of a proposed impact, a reference site, conservation site, etc.	X	
Step 2	Identify the locations where there is physical evidence that hydrology changes rapidly. Such evidence includes both natural and human- induced changes including, constrictions caused by berms or dikes, points where the water velocity changes rapidly at rapids or falls, points where significant inflows occur at the confluence of rivers, or other factors that may restrict hydrologic interaction between the wetlands or parts of a single wetland.	X	
Step 3	Delineate the boundary of the wetland to be rated such that all areas of interest that are contiguous to and within the areas where the hydrology does not change significantly, i.e. areas that have a high degree of hydrologic interaction are included within the scoring boundary.	X	
Step 4	Determine if artificial boundaries, such as property lines, state lines, roads, railroad embankments, etc., are present. These should not be used to establish scoring boundaries unless they coincide with areas where the hydrologic regime changes.	X	
Step 5	In all instances, the Rater may enlarge the minimum scoring boundaries discussed here to score together wetlands that could be scored separately.	X	
Step 6	Consult ORAM Manual Section 5.0 for how to establish scoring boundaries for wetlands that form a patchwork on the landscape, divided by artificial boundaries, contiguous to streams, lakes or rivers, or for dual classifications.		X

End of Scoring Boundary Determination. Begin Narrative Rating on next page.

Wetland ID:	W-MRK-035

Narrative Rating

INSTRUCTIONS. Answer each of the following questions. Questions 1, 2, 3 and 4 should be answered based on information obtained from the site visit or the literature and by submitting a Data Services Request to the Ohio Department of Natural Resources, Division of Natural Areas and Preserves, Natural Heritage Data Services, 1889 Fountain Square Court, Building F-1, Columbus, Ohio 43224, 614-265-6453 (phone), 614-265-3096 (fax), http://www.dnr.state.oh.us/dnap . The remaining questions are designed to be answered primarily by the results of the site visit. Refer to the User's Manual for descriptions of these wetland types. Note: "Critical habitat" is legally defined in the Endangered Species Act and is the geographic area containing physical or biological features essential to the conservation of a listed species or as an area that may require special management considerations or protection. The Rater should contact the Region 3 Headquarters or the Columbus Ecological Services Office for updates as to whether critical habitat has been designated for other federally listed threatened or endangered species. "Documented" means the wetland is listed in the appropriate State of Ohio database.

#	Question	Circle one	
1	**Critical Habitat.** Is the wetland in a township, section, or subsection of a United States Geological Survey 7.5 minute Quadrangle that has been designated by the U.S. Fish and Wildlife Service as "critical habitat" for any threatened or endangered plant or animal species? Note: as of January 1, 2001, of the federally listed endangered or threatened species which can be found in Ohio, the Indiana Bat has had critical habitat designated (50 CFR 17.95(a)) and the piping plover has had critical habitat proposed (65 FR 41812 July 6, 2000).	YES Wetland should be evaluated for possible Category 3 status Go to Question 2	***NO** Go to Question 2
2	**Threatened or Endangered Species.** Is the wetland known to contain an individual of, or documented occurrences of federal or state-listed threatened or endangered plant or animal species?	YES Wetland is a Category 3 wetland. Go to Question 3	***NO** Go to Question 3
3	**Documented High Quality Wetland.** Is the wetland on record in Natural Heritage Database as a high quality wetland?	YES Wetland is a Category 3 wetland Go to Question 4	***NO** Go to Question 4
4	**Significant Breeding or Concentration Area.** Does the wetland contain documented regionally significant breeding or nonbreeding waterfowl, neotropical songbird, or shorebird concentration areas?	YES Wetland is a Category 3 wetland Go to Question 5	***NO** Go to Question 5
5	**Category 1 Wetlands.** Is the wetland less than 0.5 hectares (1 acre) in size and **hydrologically isolated** and either 1) comprised of vegetation that is dominated (greater than eighty per cent areal cover) by *Phalaris arundinacea, Lythrum salicaria,* or *Phragmites australis* , or 2) an acidic pond created or excavated on mined lands that has little or no vegetation?	YES Wetland is a Category 1 wetland Go to Question 6	***NO** Go to Question 6
6	**Bogs.** Is the wetland a peat-accumulating wetland that 1) has no significant inflows or outflows, 2) supports acidophilic mosses, particularly *Sphagnum* spp., 3) the acidophilic mosses have >30% cover, 4) at least one species from Table 1 is present, and 5) the cover of invasive species (see Table 1) is <25%?	YES Wetland is a Category 3 wetland Go to Question 7	***NO** Go to Question 7
7	**Fens.** Is the wetland a carbon accumulating (peat, muck) wetland that is saturated during most of the year, primarily by a discharge of free flowing, mineral rich, ground water with a circumneutral ph (5.5-9.0) and with one or more plant species listed in Table 1 and the cover of invasive species listed in Table 1 is <25%?	YES Wetland is a Category 3 wetland Go to Question 8a	***NO** Go to Question 8a
8a	**"Old Growth Forest."** Is the wetland a forested wetland and is the forest characterized by, but not limited to, the following characteristics: overstory canopy trees of great age (exceeding at least 50% of a projected maximum attainable age for a species); little or no evidence of human-caused understory disturbance during the past 80 to 100 years; an all-aged structure and multilayered canopies; aggregations of canopy trees interspersed with canopy gaps; and significant numbers of standing dead snags and downed logs?	YES Wetland is a Category 3 wetland. Go to Question 8b	***NO** Go to Question 8b

Wetland ID:	W-MRK-035

8b	**Mature forested wetlands**. Is the wetland a forested wetland with 50% or more of the cover of upper forest canopy consisting of deciduous trees with large diameters at breast height (dbh), generally diameters greater than 45cm (17.7in) dbh?	YES Wetland should be evaluated for possible Category 3 status. Go to Question 9a	***NO** Go to Question 9a
9a	**Lake Erie coastal and tributary wetlands**. Is the wetland located at an elevation less than 575 feet on the USGS map, adjacent to this elevation, or along a tributary to Lake Erie that is accessible to fish?	YES Go to Question 9b	***NO** Go to Question 10
9b	Does the wetland's hydrology result from measures designed to prevent erosion and the loss of aquatic plants, i.e. the wetland is partially hydrologically restricted from Lake Erie due to lakeward or landward dikes or other hydrological controls?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 9c
9c	Are Lake Erie water levels the wetland's primary hydrological influence, i.e. the wetland is hydrologically unrestricted (no lakeward or upland border alterations), or the wetland can be characterized as an "estuarine" wetland with lake and river influenced hydrology. These include sandbar deposition wetlands, estuarine wetlands, river mouth wetlands, or those dominated by submersed aquatic vegetation.	YES Go to Question 9d	NO Go to Question 10
9d	Does the wetland have a predominance of native species within its vegetation communities, although non-native or disturbance tolerant native species can also be present?	YES Wetland is a Category 3 wetland Go to Question 10	NO Go to Question 9e
9e	Does the wetland have a predominance of non-native or disturbance tolerant native plant species within its vegetation communities?	YES Wetland should be evaluated for possible Category 3 status Go to Question 10	NO Go to Question 10
10	**Lake Plain Sand Prairies (Oak Openings)** Is the wetland located in Lucas, Fulton, Henry, or Wood Counties and can the wetland be characterized by the following description: the wetland has a sandy substrate with interspersed organic matter, a water table often within several inches of the surface, and often with a dominance of the gramineous vegetation listed in Table 1 (woody species may also be present). The Ohio Department of Natural Resources Division of Natural Areas and Preserves can provide assistance in confirming this type of wetland and its quality.	YES Wetland is a Category 3 wetland. Go to Question 11	***NO** Go to Question 11
11	**Relict Wet Prairies**. Is the wetland a relict wet prairie community dominated by some or all of the species in Table 1. Extensive prairies were formerly located in the Darby Plains (Madison and Union Counties), Sandusky Plains (Wyandot, Crawford, and Marion Counties), northwest Ohio (e.g. Erie, Huron, Lucas, Wood Counties), and portions of western Ohio Counties (e.g. Darke, Mercer, Miami, Montgomery, Van Wert etc.).	YES Wetland should be evaluated for possible Category 3 status Complete Quantitative Rating	***NO** Complete Quantitative Rating

Wetland ID:	W-MRK-035

Table 1. Characteristic plant species.

invasive/exotic spp	fen species	bog species	oak opening species	wet prairie species
Lythrum salicaria	*Zygadenus elegans var. glaucus*	*Calla palustris*	*Carex cryptolepis*	*Calamagrostis canadensis*
Myriophyllum spicatum	*Cacalia plantaginea*	*Carex atlantica var. capillacea*	*Carex lasiocarpa*	*Calamogrostis stricta*
Najas minor	*Carex flava*	*Carex echinata*	*Carex stricta*	*Carex atherodes*
Phalaris arundinacea	*Carex sterilis*	*Carex oligosperma*	*Cladium mariscoides*	*Carex buxbaumii*
Phragmites australis	*Carex stricta*	*Carex trisperma*	*Calamagrostis stricta*	*Carex pellita*
Potamogeton crispus	*Deschampsia caespitosa*	*Chamaedaphne calyculata*	*Calamagrostis canadensis*	*Carex sartwellii*
Ranunculus ficaria	*Eleocharis rostellata*	*Decodon verticillatus*	*Quercus palustris*	*Gentiana andrewsii*
Rhamnus frangula	*Eriophorum viridicarinatum*	*Eriophorum virginicum*		*Helianthus grosseserratus*
Typha angustifolia	*Gentianopsis spp.*	*Larix laricina*		*Liatris spicata*
Typha xglauca	*Lobelia kalmii*	*Nemopanthus mucronatus*		*Lysimachia quadriflora*
	Parnassia glauca	*Schechzeria palustris*		*Lythrum alatum*
	Potentilla fruticosa	*Sphagnum spp.*		*Pycnanthemum virginianum*
	Rhamnus alnifolia	*Vaccinium macrocarpon*		*Silphium terebinthinaceum*
	Rhynchospora capillacea	*Vaccinium corymbosum*		*Sorghastrum nutans*
	Salix candida	*Vaccinium oxycoccos*		*Spartina pectinata*
	Salix myricoides	*Woodwardia virginica*		*Solidago riddellii*
	Salix serissima	*Xyris difformis*		
	Solidago ohioensis			
	Tofieldia glutinosa			
	Triglochin maritimum			
	Triglochin palustre			

End of Narrative Rating. Begin Quantitative Rating on next page.

Wetland ID:	W-MRK-035

Site:	Vassell-Green Chapel	Rater(s):	MRK, KRS	Date:	9/26/2023

Field ID:

W-MRK-035 PFO

Delineated acres:	0.27
Total acres:	0.27

Metric 1. Wetland Area (size).

1.0 (max 6 pts) | 1.0 (subtotal)

Select one size class and assign score.

- [ ] >50 acres (>20.2ha) (6 pts)
- [ ] 25 to <50 acres (10.1 to <20.2ha) (5 pts)
- [ ] 10 to <25 acres (4 to <10.1ha) (4 pts)
- [ ] 3 to <10 acres (1.2 to <4ha) (3 pts)
- [ ] 0.3 to <3 acres (0.12 to <1.2ha) (2pts)
- [x] 0.1 to <0.3 acres (0.04 to <0.12ha) (1 pt)
- [ ] <0.1 acres (0.04ha) (0 pts)

Metric 2. Upland buffers and surrounding land use.

4.0 (max 14 pts.) | 5.0 (subtotal)

2a. Calculate average buffer width. Select only one and assign score. Do not double check.

- [ ] WIDE. Buffers average 50m (164ft) or more around wetland perimeter (7)
- [ ] MEDIUM. Buffers average 25m to <50m (82 to <164ft) around wetland perimeter (4)
- [x] NARROW. Buffers average 10m to <25m (32ft to <82ft) around wetland perimeter (1)
- [ ] VERY NARROW. Buffers average <10m (<32ft) around wetland perimeter (0)

2b. Intensity of surrounding land use. Select one or double check and average.

- [ ] VERY LOW. 2nd growth or older forest, prairie, savannah, wildlife area, etc. (7)
- [ ] LOW. Old field (>10 years), shrubland, young second growth forest. (5)
- [x] MODERATELY HIGH. Residential, fenced pasture, park, conservation tillage, new fallow field. (3)
- [ ] HIGH. Urban, industrial, open pasture, row cropping, mining, construction. (1)

Metric 3. Hydrology.

12.0 (max 30 pts.) | 17.0 (subtotal)

3a. Sources of Water. Score all that apply.

- [ ] High pH groundwater (5)
- [ ] Other groundwater (3)
- [x] Precipitation (1)
- [ ] Seasonal/Intermittent surface water (3)
- [ ] Perennial surface water (lake or stream) (5)

3b. Connectivity. Score all that apply.

- [ ] 100 year floodplain (1)
- [ ] Between stream/lake and other human use (1)
- [ ] Part of wetland/upland (e.g. forest), complex (1)
- [x] Part of riparian or upland corridor (1)

3c. Maximum water depth. Select one.

- [ ] >0.7 (27.6in) (3)
- [ ] 0.4 to 0.7m (15.7 to 27.6in) (2)
- [x] <0.4m (<15.7in) (1)

3d. Duration inundation/saturation. Score one or dbl check.

- [ ] Semi- to permanently inundated/saturated (4)
- [ ] Regularly inundated/saturated (3)
- [x] Seasonally inundated (2)
- [ ] Seasonally saturated in upper 30cm (12in) (1)

3e. Modifications to natural hydrologic regime. Score one or double check and average.

- [ ] None or none apparent (12)
- [x] Recovered (7)
- [ ] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] ditch
- [x] tile
- [ ] dike
- [ ] weir
- [ ] stormwater input
- [ ] point source (nonstormwater)
- [ ] filling/grading
- [ ] road bed/RR track
- [ ] dredging
- [ ] Other:

Metric 4. Habitat Alteration and Development.

8.0 (max 20 pts.) | 25.0 (subtotal)

4a. Substrate disturbance. Score one or double check and average.

- [ ] None or none apparent (4)
- [x] Recovered (3)
- [ ] Recovering (2)
- [ ] Recent or no recovery (1)

4b. Habitat development. Select only one and assign score.

- [ ] Excellent (7)
- [ ] Very good (6)
- [ ] Good (5)
- [ ] Moderately good (4)
- [ ] Fair (3)
- [x] Poor to fair (2)
- [ ] Poor (1)

4c. Habitat alteration. Score one or double check and average.

- [ ] None or none apparent (9)
- [ ] Recovered (6)
- [x] Recovering (3)
- [ ] Recent or no recovery (1)

Check all disturbances observed

- [ ] mowing
- [ ] grazing
- [ ] clearcutting
- [x] selective cutting
- [ ] woody debris removal
- [ ] toxic pollutants
- [ ] shrub/sapling removal
- [ ] herbaceous/aquatic bed removal
- [x] sedimentation
- [ ] dredging
- [ ] farming
- [ ] nutrient enrichment

25.0 (subtotal this page)

ORAM v. 5.0 Field Form Quantitative Rating

Wetland ID:	W-MRK-035

Site:	Vassell-Green Chapel	Rater(s):	MRK, KRS	Date:	9/26/2023

Field ID:

W-MRK-035 PFO

25.0
subtotal this page

0.0 max 10 pts. | **25.0** subtotal

Metric 5. Special Wetlands.

Check all that apply and score as indicated.

- [ ] Bog (10)
- [ ] Fen (10)
- [ ] Old growth forest (10)
- [ ] Mature forested wetland (5)
- [ ] Lake Erie coastal/tributary wetland-unrestricted hydrology (10)
- [ ] Lake Erie coastal/tributary wetland-restricted hydrology (5)
- [ ] Lake Plain Sand Prairies (Oak Openings) (10)
- [ ] Relict Wet Praires (10)
- [ ] Known occurrence state/federal threatened or endangered species (10)
- [ ] Significant migratory songbird/water fowl habitat or usage (10)
- [ ] Category 1 Wetland. See Question 5 Qualitative Rating (-10)

5.0 max 20pts. | **30.0** subtotal

Metric 6. Plant communities, interspersion, microtopography.

6a. Wetland Vegetation Communities.
Score all present using 0 to 3 scale.

- [ ] Aquatic bed
- [ ] Emergent
- [ ] Shrub
- [1] Forest
- [ ] Mudflats
- [ ] Open water
- [ ] Other_____

6b. horizontal (plan view) Interspersion.
Select only one.

- [ ] High (5)
- [ ] Moderately high(4)
- [ ] Moderate (3)
- [ ] Moderately low (2)
- [ ] Low (1)
- [x] None (0)

6c. Coverage of invasive plants. Refer Table 1 ORAM long form for list. Add or deduct points for coverage

- [ ] Extensive >75% cover (-5)
- [ ] Moderate 25-75% cover (-3)
- [ ] Sparse 5-25% cover (-1)
- [ ] Nearly absent <5% cover (0)
- [x] Absent (1)

6d. Microtopography.
Score all present using 0 to 3 scale.

- [0] Vegetated hummucks/tussucks
- [1] Coarse woody debris >15cm (6in)
- [1] Standing dead >25cm (10in) dbh
- [1] Amphibian breeding pools

Vegetation Community Cover Scale

0	Absent or comprises <0.1ha (0.2471 acres) contiguous area
1	Present and either comprises small part of wetland's 1 vegetation and is of moderate quality, or comprises a significant part but is of low quality
2	Present and either comprises significant part of wetland's 2 vegetation and is of moderate quality or comprises a small part and is of high quality
3	Present and comprises significant part, or more, of wetland's 3 vegetation and is of high quality

Narrative Description of Vegetation Quality

Low spp diversity and/or predominance of nonnative or low disturbance tolerant native species
Native spp are dominant component of the vegetation, mod although nonnative and/or disturbance tolerant native spp can also be present, and species diversity moderate to moderately high, but generallyw/o presence of rare threatened or endangered spp to
A predominance of native species, with nonnative spp high and/or disturbance tolerant native spp absent or virtually absent, and high spp diversity and often, but not always, the presence of rare, threatened, or endangered spp

Mudflat and Open Water Class Quality

0	Absent <0.1ha (0.247 acres)
1	Low 0.1 to <1ha (0.247 to 2.47 acres)
2	Moderate 1 to <4ha (2.47 to 9.88 acres)
3	High 4ha (9.88 acres) or more

Microtopography Cover Scale

0	Absent
1	Present very small amounts or if more common of marginal quality
2	Present in moderate amounts, but not of highest quality or in small amounts of highest quality
3	Present in moderate or greater amounts and of highest quality

30.0 TOTAL (Max 100 pts)

1 or 2 Gray Zone Category

Wetland ID:	W-MRK-035

ORAM Summary Worksheet

		Circle answer or insert score		Result
Narrative Rating	Question 1 Critical Habitat	YES	*NO	If yes, Category 3.
	Question 2. Threatened or Endangered Species	YES	*NO	If yes, Category 3.
	Question 3. High Quality Natural Wetland	YES	*NO	If yes, Category 3.
	Question 4. Significant bird habitat	YES	*NO	If yes, Category 3.
	Question 5. Category 1 Wetlands	YES	*NO	If yes, Category 1.
	Question 6. Bogs	YES	*NO	If yes, Category 3.
	Question 7. Fens	YES	*NO	If yes, Category 3.
	Question 8a. Old Growth Forest	YES	*NO	If yes, Category 3.
	Question 8b. Mature Forested Wetland	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9b. Lake Erie Wetlands - Restricted	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 9d. Lake Erie Wetlands – Unrestricted with native plants	YES	NO	If yes, Category 3
	Question 9e. Lake Erie Wetlands - Unrestricted with invasive plants	YES	NO	If yes, evaluate for Category 3; may also be 1 or 2.
	Question 10. Oak Openings	YES	*NO	If yes, Category 3
	Question 11. Relict Wet Prairies	YES	*NO	If yes, evaluate for Category 3; may also be 1 or 2.
Quantitative Rating	Metric 1. Size	1		
	Metric 2. Buffers and surrounding land use	4		
	Metric 3. Hydrology	12		
	Metric 4. Habitat	8		
	Metric 5. Special Wetland Communities	0		
	Metric 6. Plant communities, interspersion, microtopography	5		
	TOTAL SCORE	30		Category based on score breakpoints

Complete Wetland Categorization Worksheet.

Wetland ID:	W-MRK-035

Wetland Categorization Worksheet

Choices	Circle one		Evaluation of Categorization Result of ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 2, 3, 4, 6, 7, 8a, 9d, 10	YES Wetland is categorized as a Category 3 wetland	***NO**	Is quantitative rating score *less* than the Category 2 scoring threshold (*excluding* gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been over- categorized by the ORAM
Did you answer "Yes" to any of the following questions: Narrative Rating Nos. 1, 8b, 9b, 9e, 11	YES Wetland should be evaluated for possible Category 3 status	***NO**	Evaluate the wetland using the 1) narrative criteria in OAC Rule 3745-1-54(C) and 2) the quantitative rating score. If the wetland is determined to be a Category 3 wetland using either of these, it should be categorized as a Category 3 wetland. Detailed biological and/or functional assessments may also be used to determine the wetland's category.
Did you answer "Yes" to Narrative Rating No. 5	YES Wetland is categorized as a Category 1 wetland	***NO**	Is quantitative rating score *greater* than the Category 2 scoring threshold *(including* any gray zone)? If yes, reevaluate the category of the wetland using the narrative criteria in OAC Rule 3745-1-54(C) and biological and/or functional assessments to determine if the wetland has been under-categorized by the ORAM
Does the quantitative score fall within the scoring range of a Category 1, 2, or 3 wetland?	YES Wetland is assigned to the appropriate category based on the scoring range	***NO**	If the score of the wetland is located within the scoring range for a particular category, the wetland should be assigned to that category. In all instances however, the narrative criteria described in OAC Rule 3745-1-54(C) can be used to clarify or change a categorization based on a quantitative score.
Does the quantitative score fall with the *"gray zone"* for Category 1 or 2 or Category 2 or 3 wetlands?	***YES** Wetland is assigned to the higher of the two categories or assigned to a category based on detailed assessments and the narrative criteria	NO	Rater has the option of assigning the wetland to the higher of the two categories or to assign a category based on the results of a nonrapid wetland assessment method, e.g. functional assessment, biological assessment, etc, and a consideration of the narrative criteria in OAC rule 3745-1- 54(C).
Does the wetland otherwise exhibit *moderate OR superior* hydrologic OR habitat, OR recreational functions AND the wetland was *not* categorized as a Category 2 wetland (in the case of moderate functions) or a Category 3 wetland (in the case of superior functions) by this method?	YES Wetland was undercategorized by this method. A written justification for recategorization should be provided on Background Information Form	NO Wetland is assigned to category as determined by the ORAM.	A wetland may be undercategorized using this method, but still exhibit one or more superior functions, e.g. a wetland's biotic communities may be degraded by human activities, but the wetland may still exhibit superior hydrologic functions because of its type, landscape position, size, local or regional significance, etc. In this circumstance, the narrative criteria in OAC Rule 3745-1-54(C)(2) and (3) are controlling, and the under-categorization should be corrected. A written justification with supporting reasons or information for this determination should be provided.

Final Category

Choose one	Category 1	***Category 2**	Category 3	

End of Ohio Rapid Assessment Method for Wetlands.

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PHOTOGRAPHIC RECORD

Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-CRW-001 **Date:** June 7, 2023 **Description:** Wetland Data Point PEM Facing North	

W-CRW-001 **Date:** June 7, 2023 **Description:** Wetland Data Point PEM Facing East	

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PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-CRW-001

Date:

June 7, 2023

Description:

Wetland Data Point

PEM

Facing South



W-CRW-001

Date:

June 7, 2023

Description:

Wetland Data Point

PEM

Facing West



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD

Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-CRW-001	
Date: June 7, 2023	
Description: Wetland Data Point PEM Facing Soil	

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PHOTOGRAPHIC RECORD

Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

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PHOTOGRAPHIC RECORD

Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-001	

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PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

Date:

June 14, 2023

Description:

Wetland Data Point

PEM

Facing North



W-MRK-001

Date:

June 14, 2023

Description:

Wetland Data Point

PEM

Facing East



W-MRK-001

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PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

Date:

June 14, 2023

Description:

Wetland Data Point

PEM

Facing South



W-MRK-001

Date:

June 14, 2023

Description:

Wetland Data Point

PEM

Facing West



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PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-001

Date:

June 14, 2023

Description:

Wetland Data Point

PEM

Facing Soil



W-MRK-001

Date:

June 14, 2023

Description:

Wetland Data Point

PFO

Facing North



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-001

Date:

June 14, 2023

Description:

Wetland Data Point

PFO

Facing East



W-MRK-001

Date:

June 14, 2023

Description:

Wetland Data Point

PFO

Facing South



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-001

Date:

June 14, 2023

Description:

Wetland Data Point

PFO

Facing West



W-MRK-001

Date:

June 14, 2023

Description:

Wetland Data Point

PFO

Facing Soil



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-002
Date: June 14, 2023
Description: Wetland Data Point PEM Facing North



W-MRK-002
Date: June 14, 2023
Description: Wetland Data Point PEM Facing East



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PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-002
Date: June 14, 2023
Description: Wetland Data Point PEM Facing South



W-MRK-002
Date: June 14, 2023
Description: Wetland Data Point PEM Facing West



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-002
Date: June 14, 2023
Description: Wetland Data Point PEM Facing Soil



W-MRK-002
Date: June 14, 2023
Description: Wetland Data Point PFO Facing North



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-002
Date: June 14, 2023
Description: Wetland Data Point PFO Facing East



W-MRK-002
Date: June 14, 2023
Description: Wetland Data Point PFO Facing South



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-002

Date:

June 14, 2023

Description:

Wetland Data Point

PFO

Facing West



W-MRK-002

Date:

June 14, 2023

Description:

Wetland Data Point

PFO

Facing Soil



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD

Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-004

Date:

June 15, 2023

Description:

Wetland Data Point

PFO

Facing North



W-MRK-004

Date:

June 15, 2023

Description:

Wetland Data Point

PFO

Facing East



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-004
Date: June 15, 2023
Description: Wetland Data Point PFO Facing South



W-MRK-004
Date: June 15, 2023
Description: Wetland Data Point PFO Facing West



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-004

Date:

June 15, 2023

Description:

Wetland Data Point

PFO

Facing Soil



W-MRK-005

Date:

June 15, 2023

Description:

Wetland Data Point

PFO

Facing North



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-005 **Date:** June 15, 2023 **Description:** Wetland Data Point PFO Facing East	

W-MRK-005 **Date:** June 15, 2023 **Description:** Wetland Data Point PFO Facing South	

AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-005
Date: June 15, 2023
Description: Wetland Data Point PFO Facing West



W-MRK-005
Date: June 15, 2023
Description: Wetland Data Point PFO Facing Soil



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD

Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-006

Date:

June 16, 2023

Description:

Wetland Data Point

PEM

Facing North



W-MRK-006

Date:

June 16, 2023

Description:

Wetland Data Point

PEM

Facing East



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD

Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-006
Date: June 16, 2023
Description: Wetland Data Point PEM Facing South



W-MRK-006
Date: June 16, 2023
Description: Wetland Data Point PEM Facing West



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-006

Date:

June 16, 2023

Description:

Wetland Data Point

PEM

Facing Soil



W-MRK-007

Date:

June 16, 2023

Description:

Wetland Data Point

PFO

Facing North



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-007

Date:

June 16, 2023

Description:

Wetland Data Point

PFO

Facing East



W-MRK-007

Date:

June 16, 2023

Description:

Wetland Data Point

PFO

Facing South



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-007

Date:

June 16, 2023

Description:

Wetland Data Point

PFO

Facing West



W-MRK-007

Date:

June 16, 2023

Description:

Wetland Data Point

PFO

Facing Soil



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD

Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-011
Date: June 22, 2023
Description: Wetland Data Point PEM Facing North



W-MRK-011
Date: June 22, 2023
Description: Wetland Data Point PEM Facing East



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-011
Date: June 22, 2023
Description: Wetland Data Point PEM Facing South



W-MRK-011
Date: June 22, 2023
Description: Wetland Data Point PEM Facing West



Case No. 24-0014-EL-BLN

Part 7 of 9

AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD

Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-013 **Date:** June 26, 2023 **Description:** Wetland Data Point PFO Facing Soil	

W-MRK-014 **Date:** June 26, 2023 **Description:** Wetland Data Point PFO Facing North	

AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-014

Date:

June 26, 2023

Description:

Wetland Data Point

PFO

Facing East



W-MRK-014

Date:

June 26, 2023

Description:

Wetland Data Point

PFO

Facing South



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD

Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-014
Date: June 26, 2023
Description: Wetland Data Point PFO Facing West



W-MRK-014
Date: June 26, 2023
Description: Wetland Data Point PFO Facing Soil



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD

Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-016	
Date: June 27, 2023	
Description: Wetland Data Point PEM Facing North	

W-MRK-016	
Date: June 27, 2023	
Description: Wetland Data Point PEM Facing East	

AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-016

Date:

June 27, 2023

Description:

Wetland Data Point

PEM

Facing South



W-MRK-016

Date:

June 27, 2023

Description:

Wetland Data Point

PEM

Facing West



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD

Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-016 **Date:** June 27, 2023 **Description:** Wetland Data Point PEM Facing Soil	

W-MRK-016 **Date:** September 14, 2023 **Description:** Wetland Data Point PFO Facing North	

AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD

Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-016

Date:

September 14, 2023

Description:

Wetland Data Point

PFO

Facing East



W-MRK-016

Date:

September 14, 2023

Description:

Wetland Data Point

PFO

Facing South



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-016

Date:

September 14, 2023

Description:

Wetland Data Point

PFO

Facing West



W-MRK-016

Date:

September 14, 2023

Description:

Wetland Data Point

PFO

Facing Soil



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD

Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-017

Date:

June 27, 2023

Description:

Wetland Data Point

PFO

Facing North



W-MRK-017

Date:

June 27, 2023

Description:

Wetland Data Point

PFO

Facing East



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-017

Date:

June 27, 2023

Description:

Wetland Data Point

PFO

Facing South



W-MRK-017

Date:

June 27, 2023

Description:

Wetland Data Point

PFO

Facing West



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD

Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-017	
Date: June 27, 2023	
Description: Wetland Data Point PFO Facing Soil	

AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD

Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD

Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-020	

AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD

Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

Date:

September 12, 2023

Description:

Wetland Data Point

PFO

Facing North



W-MRK-020

Date:

September 12, 2023

Description:

Wetland Data Point

PFO

Facing East



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-020

Date:

September 12, 2023

Description:

Wetland Data Point

PFO

Facing South



W-MRK-020

Date:

September 12, 2023

Description:

Wetland Data Point

PFO

Facing West



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-020
Date: September 12, 2023
Description: Wetland Data Point PFO Facing Soil



W-MRK-020
Date: September 12, 2023
Description: Wetland Data Point PSS Facing North



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-020
Date: September 12, 2023
Description: Wetland Data Point PSS Facing East



W-MRK-020
Date: September 12, 2023
Description: Wetland Data Point PSS Facing South



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-020

Date:

September 12, 2023

Description:

Wetland Data Point

PSS

Facing West



W-MRK-020

Date:

September 12, 2023

Description:

Wetland Data Point

PSS

Facing Soil



W-MRK-022

AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

Date:

September 11, 2023

Description:

Wetland Data Point

PEM

Facing North



W-MRK-022

Date:

September 11, 2023

Description:

Wetland Data Point

PEM

Facing East



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-022

Date:

September 11, 2023

Description:

Wetland Data Point

PEM

Facing South



W-MRK-022

Date:

September 11, 2023

Description:

Wetland Data Point

PEM

Facing West



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD

Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-022

Date:

September 11, 2023

Description:

Wetland Data Point

PEM

Facing Soil



W-MRK-030

Date:

September 13, 2023

Description:

Wetland Data Point

PEM

Facing North



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-030

Date:

September 13, 2023

Description:

Wetland Data Point

PEM

Facing East



W-MRK-030

Date:

September 13, 2023

Description:

Wetland Data Point

PEM

Facing South



W-MRK-030

AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

Date:

September 13, 2023

Description:

Wetland Data Point

PEM

Facing West



W-MRK-030

Date:

September 13, 2023

Description:

Wetland Data Point

PEM

Facing Soil



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-030

Date:

September 13, 2023

Description:

Wetland Data Point

PFO

Facing North



W-MRK-030

Date:

September 13, 2023

Description:

Wetland Data Point

PFO

Facing East



W-MRK-030

AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

Date:

September 13, 2023

Description:

Wetland Data Point

PFO

Facing South



W-MRK-030

Date:

September 13, 2023

Description:

Wetland Data Point

PFO

Facing West



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD

Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-030	
Date: September 13, 2023	
Description: Wetland Data Point PFO Facing Soil	

AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD

Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD

Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-034	

AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

Date:

September 15, 2023

Description:

Wetland Data Point

PEM

Facing North



W-MRK-034

Date:

September 15, 2023

Description:

Wetland Data Point

PEM

Facing East



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-034

Date:

September 15, 2023

Description:

Wetland Data Point

PEM

Facing South



W-MRK-034

Date:

September 15, 2023

Description:

Wetland Data Point

PEM

Facing West



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-034

Date:

September 15, 2023

Description:

Wetland Data Point

PEM

Facing Soil



W-MRK-035

Date:

September 26, 2023

Description:

Wetland Data Point

PFO

Facing North



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-035

Date:

September 26, 2023

Description:

Wetland Data Point

PFO

Facing East



W-MRK-035

Date:

September 26, 2023

Description:

Wetland Data Point

PFO

Facing South



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD

Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-035
Date:
September 26, 2023
Description:
Wetland Data Point
PFO
Facing West



W-MRK-035
Date:
September 26, 2023
Description:
Wetland Data Point
PFO
Facing Soil



APPENDIX B

OEPA STREAM DATA FORMS / DELINEATED FEATURES PHOTOGRAPHS

S-CRW-001 INT

Class III PHW

Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3) **75**

SITE NAME/LOCATION: Vassell-Green Chapel

SITE NUMBER: NA | RIVER BASIN: 05060001/Upper Sc | DRAINAGE AREA (mi²): 0.10

LENGTH OF STREAM REACH (ft): 200 | LAT.: 40.22706 | LONG.: -82.85053 | RIVER CODE: NA | RIVER MILE: NA

DATE: 06/07/23 | SCORER: CRW, RBL | COMMENTS:

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☑ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

pREVIOULSY Channelized stream within forested area drains out of study area.

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS [16 pts]	0	☑	SILT [3 pt]	12
☐	BOULDER (>256 mm) [16 pts]	5	☐	LEAF PACK/WOODY DEBRIS [3 pts]	3
☐	BEDROCK [16 pt]	0	☐	FINE DETRITUS [3 pts]	0
☑	COBBLE (65-256 mm) [12 pts]	70	☐	CLAY or HARDPAN [0 pt]	0
☐	GRAVEL (2-64 mm) [9 pts]	10	☐	MUCK [0 pts]	0
☐	SAND (<2 mm) [6 pts]	0	☐	ARTIFICIAL [3 pts]	0

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 75 **(A)** | Substrate Percentage Check | **(B)**

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 15 **TOTAL NUMBER OF SUBSTRATE TYPES:** 5

HHEI Metric Points

Substrate Max = 40

20

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐	> 30 centimeters [20 pts]	☐	> 5 cm - 10 cm [15 pts]
☐	> 22.5 - 30 cm [30 pts]	☐	< 5 cm [5 pts]
☑	> 10 - 22.5 cm [25 pts]	☐	NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS: 7 inches **MAXIMUM POOL DEPTH** (Inches): 7.00

Pool Depth Max = 30

25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☑	> 4.0 meters (> 13') [30 pts]	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☐	> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	☐	≤ 1.0 m (<=3' 3") [5 pts]
☐	> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]		

COMMENTS: OHW=143"x10" BF=157"x16" **AVERAGE BANKFULL WIDTH** (Feet): 2.50

Bankfull Width Max=30

30

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R	FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☑	Moderate 5-10m	☑	☑	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☑	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS:

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☑ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS:

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☑ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☑ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☑ WWH Name: **Big Walnut Creek: 05060001000137** Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Sunbury** NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: **Delaware** Township / City: **Trenton**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **Y** Date of last precipitation: **06/06/23** Quantity: **0.50**

Photograph Information: **Upstream, downstream, substrate**

Elevated Turbidity? (Y/N): **N** Canopy (% open): **15** **Overall Stability of BOTH Stream Banks (check one)**: Stable ☑ Moderately Stable ☐ Unstable ☐

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain: _____

Additional comments/description of pollution impacts: _____

Construction runoff and sedimentation

BIOTIC EVALUATION

Performed? (Y/N): **Y** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) **Y** Voucher? (Y/N) **N** Salamanders Observed? (Y/N) **N** Voucher? (Y/N) **N**

Frogs or Tadpoles Observed? (Y/N) **N** Voucher? (Y/N) **N** Aquatic Macroinvertebrates Observed? (Y/N) **Y** Voucher? (Y/N) **N**

Comments Regarding Biology: _____

Creek chubs and smaller minnows. Stone flies, mayflies, and caddis flies

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW →



Save as pdf Reset Form

Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3) **13**

SITE NAME/LOCATION: Vassell-Green Chapel

SITE NUMBER: NA | RIVER BASIN: | DRAINAGE AREA (mi²): 0.07

LENGTH OF STREAM REACH (ft): 200 | LAT.: 40.22223 | LONG.: -82.82707 | RIVER CODE: NA | RIVER MILE: NA

DATE: 06/14/23 | SCORER: MRK, AJH | COMMENTS:

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☑ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

Channelized swale in forested area drains to W-MRK-001.

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS [16 pts]	0	☐	SILT [3 pt]	25
☐	BOULDER (>256 mm) [16 pts]	0	☑	LEAF PACK/WOODY DEBRIS [3 pts]	75
☐	BEDROCK [16 pt]	0	☐	FINE DETRITUS [3 pts]	0
☐	COBBLE (65-256 mm) [12 pts]	0	☐	CLAY or HARDPAN [0 pt]	0
☐	GRAVEL (2-64 mm) [9 pts]	0	☐	MUCK [0 pts]	0
☐	SAND (<2 mm) [6 pts]	0	☐	ARTIFICIAL [3 pts]	0

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 0 **(A)** | Substrate Percentage Check | **(B)**

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 6 **TOTAL NUMBER OF SUBSTRATE TYPES:** 2

HHEI Metric Points

Substrate Max = 40

8

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐	> 30 centimeters [20 pts]	☐	> 5 cm - 10 cm [15 pts]
☐	> 22.5 - 30 cm [30 pts]	☐	< 5 cm [5 pts]
☐	> 10 - 22.5 cm [25 pts]	☑	NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS: **MAXIMUM POOL DEPTH** (Inches): 0.00

Pool Depth Max = 30

0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐	> 4.0 meters (> 13') [30 pts]	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☐	> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	☑	≤ 1.0 m (<=3' 3") [5 pts]
☐	> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]		

COMMENTS: **AVERAGE BANKFULL WIDTH** (Feet): 2.50

Bankfull Width Max=30

5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R	FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☑	☑	Moderate 5-10m	☑	☑	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS:

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☐ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☑ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS:

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☑	None	☐	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>3

STREAM GRADIENT ESTIMATE

☑ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☑ WWH Name: **Prairie Run-Big Walnut Creek: 050600011306** Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Jersey** NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: **Delaware** Township / City: **Trenton**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **Y** Date of last precipitation: **06/13/23** Quantity: **0.50**

Photograph Information: **Upstream, downstream, substrate**

Elevated Turbidity? (Y/N): **N** Canopy (% open): _____ **Overall Stability of BOTH Stream Banks (check one)**: Stable ☑ Moderately Stable ☐ Unstable ☐

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain: _____

Additional comments/description of pollution impacts: **Agricultural runoff and sedimentation**

BIOTIC EVALUATION

Performed? (Y/N): **Y** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) **N** Voucher? (Y/N) **N** Salamanders Observed? (Y/N) **N** Voucher? (Y/N) **N**

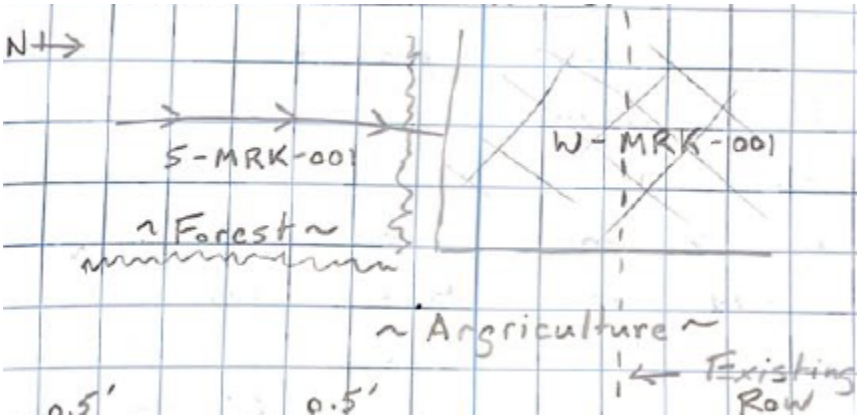
Frogs or Tadpoles Observed? (Y/N) **N** Voucher? (Y/N) **N** Aquatic Macroinvertebrates Observed? (Y/N) **N** Voucher? (Y/N) **N**

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW →



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S-MRK-002 INT

Class II PHW

Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3) **40**

SITE NAME/LOCATION: Vassell-Green Chapel

SITE NUMBER: NA | RIVER BASIN: | DRAINAGE AREA (mi²): 0.06

LENGTH OF STREAM REACH (ft): 250 | LAT.: 40.20528 | LONG.: -82.78773 | RIVER CODE: NA | RIVER MILE: NA

DATE: 06/14/23 | SCORER: MRK, AJH | COMMENTS:

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☑ RECOVERING ☐ RECENT OR NO RECOVERY

Crosses agricultural field and channel growing hydrophytic vegetation.

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS [16 pts]	0	☑	SILT [3 pt]	70
☐	BOULDER (>256 mm) [16 pts]	0	☐	LEAF PACK/WOODY DEBRIS [3 pts]	0
☐	BEDROCK [16 pt]	0	☐	FINE DETRITUS [3 pts]	0
☐	COBBLE (65-256 mm) [12 pts]	0	☑	CLAY or HARDPAN [0 pt]	30
☐	GRAVEL (2-64 mm) [9 pts]	0	☐	MUCK [0 pts]	0
☐	SAND (<2 mm) [6 pts]	0	☐	ARTIFICIAL [3 pts]	0

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 0 **(A)** | Substrate Percentage Check | **(B)**

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 3 **TOTAL NUMBER OF SUBSTRATE TYPES:** 2

HHEI Metric Points

Substrate Max = 40

5

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐	> 30 centimeters [20 pts]	☑	> 5 cm - 10 cm [15 pts]
☐	> 22.5 - 30 cm [30 pts]	☐	< 5 cm [5 pts]
☐	> 10 - 22.5 cm [25 pts]	☐	NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS: **MAXIMUM POOL DEPTH** (Inches): 3.00

Pool Depth Max = 30

15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐	> 4.0 meters (> 13') [30 pts]	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☐	> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	☐	≤ 1.0 m (<=3' 3") [5 pts]
☑	> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]		

COMMENTS: **AVERAGE BANKFULL WIDTH** (Feet): 6.00

Bankfull Width Max=30

20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R	FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☑	☑	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☑	☑	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS:

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☑	Stream Flowing	☐	Moist Channel, isolated pools, no flow (Intermittent)
☐	Subsurface flow with isolated pools (Interstitial)	☐	Dry channel, no water (Ephemeral)

COMMENTS:

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐	None	☑	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>3

STREAM GRADIENT ESTIMATE

☑ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☑ WWH Name: **Hoover Reservoir-Big Walnut Creek 050600011502** Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Jersey** NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: **Delaware** Township / City: **Trenton**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **Y** Date of last precipitation: **06/13/23** Quantity: **0.50**

Photograph Information: **Upstream, downstream, substrate**

Elevated Turbidity? (Y/N): **N** Canopy (% open): _____ **Overall Stability of BOTH Stream Banks (check one)**: Stable ☑ Moderately Stable ☐ Unstable ☐

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain: _____

Additional comments/description of pollution impacts: **Agricultural runoff and sedimentation**

BIOTIC EVALUATION

Performed? (Y/N): **Y** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) **N** Voucher? (Y/N) **N** Salamanders Observed? (Y/N) **N** Voucher? (Y/N) **N**

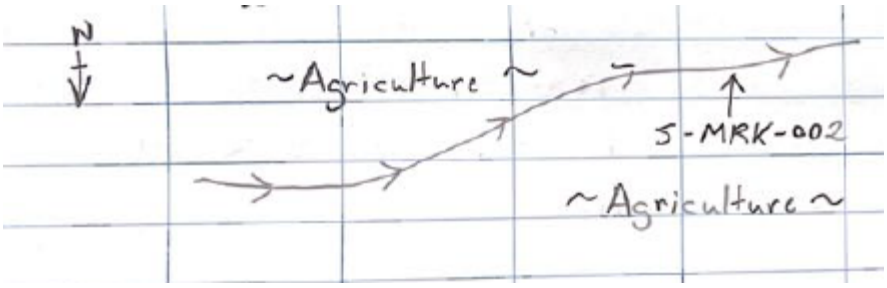
Frogs or Tadpoles Observed? (Y/N) **Y** Voucher? (Y/N) **N** Aquatic Macroinvertebrates Observed? (Y/N) **N** Voucher? (Y/N) **N**

Comments Regarding Biology: **Frogs observed**

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW →



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S-MRK-005 PER

Rating - Poor

Ohio EPA Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 40

Stream & Location: UNT to Duncan Run **RM:** _ _ _._ **Date:** 6-15-23

AEP Vassell-Green Chapel

Scorers Full Name & Affiliation: MRK, AJH/AECOM

River Code:_ _ _- _ _ _- _ _ _ **STORET #:**_ _ _ _ _ _ **Lat./ Long.:** (NAD 83 - decimal °) 40.152913, -82.748472 **Office verified location** ☐

1] SUBSTRATE

Check **ONLY Two** substrate *TYPE BOXES*; estimate % or note every type present

Check ONE (*Or 2 & average*)

BEST TYPES	POOL	RIFFLE	OTHER TYPES	POOL	RIFFLE
☐ ☐ BLDR /SLABS [10]			☐ ☐ HARDPAN [4]		
☐ ☐ BOULDER [9]			☑ ☐ DETRITUS [3]	40	
☐ ☐ COBBLE [8]			☐ ☐ MUCK [2]		
☐ ☐ GRAVEL [7]			☑ ☐ SILT [2]	60	
☐ ☐ SAND [6]			☐ ☐ ARTIFICIAL [0]		
☐ ☐ BEDROCK [5]					

(Score natural substrates; ignore sludge from point-sources)

NUMBER OF BEST TYPES: ☐ 4 or more [2] ☑ 3 or less [0]

ORIGIN
- ☐ LIMESTONE [1]
- ☐ TILLS [1]
- ☑ WETLANDS [0]
- ☐ HARDPAN [0]
- ☐ SANDSTONE [0]
- ☐ RIP/RAP [0]
- ☐ LACUSTURINE [0]
- ☐ SHALE [-1]
- ☐ COAL FINES [-2]

QUALITY

SILT
- ☑ HEAVY [-2]
- ☐ MODERATE [-1]
- ☐ NORMAL [0]
- ☐ FREE [1]

EMBEDDEDNESS
- ☑ EXTENSIVE [-2]
- ☐ MODERATE [-1]
- ☐ NORMAL [0]
- ☐ NONE [1]

Substrate 1 *Maximum 20*

Comments

Heavy siltation

2] INSTREAM COVER

Indicate presence 0 to 3: **0**-Absent; **1**-Very small amounts or if more common of marginal quality; **2**-Moderate amounts, but not of highest quality or in small amounts of highest quality; **3**-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

1 UNDERCUT BANKS [1]	___ POOLS > 70cm [2]	___ OXBOWS, BACKWATERS [1]
1 OVERHANGING VEGETATION [1]	___ ROOTWADS [1]	___ AQUATIC MACROPHYTES [1]
___ SHALLOWS (IN SLOW WATER) [1]	___ BOULDERS [1]	1 LOGS OR WOODY DEBRIS [1]
1 ROOTMATS [1]		

AMOUNT

Check ONE (*Or 2 & average*)
- ☐ EXTENSIVE >75% [11]
- ☑ MODERATE 25-75% [7]
- ☐ SPARSE 5-<25% [3]
- ☐ NEARLY ABSENT <5% [1]

Comments

Cover 11 *Maximum 20*

3] CHANNEL MORPHOLOGY

Check ONE in each category (*Or 2 & average*)

SINUOSITY
- ☐ HIGH [4]
- ☑ MODERATE [3]
- ☐ LOW [2]
- ☐ NONE [1]

DEVELOPMENT
- ☐ EXCELLENT [7]
- ☑ GOOD [5]
- ☐ FAIR [3]
- ☐ POOR [1]

CHANNELIZATION
- ☐ NONE [6]
- ☑ RECOVERED [4]
- ☐ RECOVERING [3]
- ☐ RECENT OR NO RECOVERY [1]

STABILITY
- ☐ HIGH [3]
- ☑ MODERATE [2]
- ☐ LOW [1]

Comments

Channel 14 *Maximum 20*

4] BANK EROSION AND RIPARIAN ZONE

Check **ONE** in each category for *EACH BANK* (*Or 2 per bank & average*)

River right looking downstream

EROSION L	EROSION R	
☐	☐	NONE / LITTLE [3]
☑	☑	MODERATE [2]
☐	☐	HEAVY / SEVERE [1]

RIPARIAN WIDTH L	RIPARIAN WIDTH R	
☐	☐	WIDE > 50m [4]
☐	☐	MODERATE 10-50m [3]
☐	☐	NARROW 5-10m [2]
☑	☑	VERY NARROW < 5m [1]
☐	☐	NONE [0]

FLOOD PLAIN QUALITY L	FLOOD PLAIN QUALITY R	
☐	☐	FOREST, SWAMP [3]
☐	☐	SHRUB OR OLD FIELD [2]
☐	☐	RESIDENTIAL, PARK, NEW FIELD [1]
☐	☐	FENCED PASTURE [1]
☑	☑	OPEN PASTURE, ROWCROP [0]

L	R	
☐	☐	CONSERVATION TILLAGE [1]
☐	☐	URBAN OR INDUSTRIAL [0]
☐	☐	MINING / CONSTRUCTION [0]

Indicate predominant land use(s) past 100m riparian.

Comments

Agricultural fields north and south of forested riparian area.

Riparian 3 *Maximum 10*

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH

Check **ONE** (*ONLY!*)
- ☐ > 1m [6]
- ☐ 0.7-<1m [4]
- ☐ 0.4-<0.7m [2]
- ☑ 0.2-<0.4m [1]
- ☐ < 0.2m [0]

CHANNEL WIDTH

Check ONE (*Or 2 & average*)
- ☐ POOL WIDTH > RIFFLE WIDTH [2]
- ☑ POOL WIDTH = RIFFLE WIDTH [1]
- ☐ POOL WIDTH > RIFFLE WIDTH [0]

CURRENT VELOCITY

Check ALL that apply
- ☐ TORRENTIAL [-1]
- ☐ VERY FAST [1]
- ☐ FAST [1]
- ☐ MODERATE [1]
- ☑ SLOW [1]
- ☐ INTERSTITIAL [-1]
- ☐ INTERMITTENT [-2]
- ☐ EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Comments

Pool / Current 3 *Maximum 12*

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (*Or 2 & average*). ☐ NO RIFFLE [metric=0]

RIFFLE DEPTH
- ☑ BEST AREAS > 10cm [2]
- ☐ BEST AREAS 5-10cm [1]
- ☐ BEST AREAS < 5cm [metric=0]

RUN DEPTH
- ☐ MAXIMUM > 50cm [2]
- ☑ MAXIMUM < 50cm [1]

RIFFLE / RUN SUBSTRATE
- ☐ STABLE (e.g., Cobble, Boulder) [2]
- ☐ MOD. STABLE (e.g., Large Gravel) [1]
- ☑ UNSTABLE (e.g., Fine Gravel, Sand) [0]

RIFFLE / RUN EMBEDDEDNESS
- ☐ NONE [2]
- ☐ LOW [1]
- ☐ MODERATE [0]
- ☑ EXTENSIVE [-1]

Comments

Riffle / Run 2 *Maximum 8*

6] GRADIENT

DRAINAGE AREA (1.34 mi²)

ft/mi)
- ☐ VERY LOW - LOW [2-4]
- ☑ MODERATE [6-10]
- ☐ HIGH - VERY HIGH [10-6]

%POOL: **%GLIDE:** **%RUN:** 100 **%RIFFLE:**

Gradient 6 *Maximum 10*

A] SAMPLED REACH

Check ALL that apply

Comment RE: Reach consistency/ Is reach typical of steam?*, Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

METHOD

- ☐ BOAT
- ☐ WADE
- ☐ L. LINE
- ☑ OTHER

STAGE

1st -sample pass- 2nd

- ☐ HIGH ☐
- ☐ UP ☐
- ☑ NORMAL ☐
- ☐ LOW ☐
- ☐ DRY ☐

DISTANCE

- ☐ 0.5 Km
- ☐ 0.2 Km
- ☐ 0.15 Km
- ☐ 0.12 Km
- ☐ OTHER

200 feet

CLARITY

1st --sample pass-- 2nd

- ☑ < 20 cm ☐
- ☐ 20-<40 cm ☐
- ☐ 40-70 cm ☐
- ☐ > 70 cm/ CTB ☐
- ☐ SECCHI DEPTH ☐

CANOPY

- ☐ > 85%- OPEN
- ☐ 55%-<85%
- ☐ 30%-<55%
- ☑ 10%-<30%
- ☐ <10%- CLOSED

1st pass _____ cm

2nd _____ cm

C] REC

B] AESTHETIC

- ☐ NUISANCE ALGAE
- ☐ INVASIVE MACROPHYTES
- ☐ EXCESS TURBIDITY
- ☐ DISCOLORATION
- ☐ FOAM / SCUM
- ☐ OIL SHEEN
- ☑ TRASH / LITTER
- ☐ NUISANCE ODOR
- ☐ SLUDGE DEPOSITS
- ☐ CSOs/SSOs/OUTFALLS

ION AREA DEPTH

POOL: ☐ >100ft2 ☐ >3ft

D] MAINTENANCE

PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG-SUCCESSION-OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING-BEDLOAD-STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

Circle some & *COMMENT*

E] ISSUES

WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H_20 / TILE / H_20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS

- $\bar{x}$ width 9'
- $\bar{x}$ depth
- max. depth 12"
- $\bar{x}$ bankfull width 16'
- bankfull $\bar{x}$ depth 6'
- W/D ratio
- bankfull max. depth
- floodprone x^2 width
- entrench. ratio

Le *Tree:*

Stream Drawing:



S-MRK-006 INT

Class II PHW

Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3) **31**

SITE NAME/LOCATION: Vassell-Green Chapel

SITE NUMBER: NA | RIVER BASIN: | DRAINAGE AREA (mi²): 0.62

LENGTH OF STREAM REACH (ft): 250 | LAT.: 40.12718 | LONG.: -82.71825 | RIVER CODE: NA | RIVER MILE: NA

DATE: 06/16/23 | SCORER: MRK, AJH | COMMENTS:

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☑ RECOVERING ☐ RECENT OR NO RECOVERY

Located in an active cattle pasture.

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS [16 pts]	0	☑	SILT [3 pt]	70
☐	BOULDER (>256 mm) [16 pts]	0	☐	LEAF PACK/WOODY DEBRIS [3 pts]	0
☐	BEDROCK [16 pt]	0	☐	FINE DETRITUS [3 pts]	10
☐	COBBLE (65-256 mm) [12 pts]	0	☑	CLAY or HARDPAN [0 pt]	20
☐	GRAVEL (2-64 mm) [9 pts]	0	☐	MUCK [0 pts]	0
☐	SAND (<2 mm) [6 pts]	0	☐	ARTIFICIAL [3 pts]	0

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 0 **(A)** | Substrate Percentage Check | **(B)**

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 3 **TOTAL NUMBER OF SUBSTRATE TYPES:** 3

HHEI Metric Points

Substrate Max = 40: 6

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐	> 30 centimeters [20 pts]	☐	> 5 cm - 10 cm [15 pts]
☐	> 22.5 - 30 cm [30 pts]	☑	< 5 cm [5 pts]
☐	> 10 - 22.5 cm [25 pts]	☐	NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS: **MAXIMUM POOL DEPTH** (Inches): 2.00

Pool Depth Max = 30: 5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐	> 4.0 meters (> 13') [30 pts]	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☐	> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	☐	≤ 1.0 m (<=3' 3") [5 pts]
☑	> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]		

COMMENTS: **AVERAGE BANKFULL WIDTH** (Feet): 8.00

Bankfull Width Max=30: 20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R	FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☑	☑	None	☑	☑	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS:

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☑ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS:

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☑ None	☐ 1.0	☐ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☑ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☑ WWH Name: **Headwaters Raccoon Creek 050400060301** Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Jersey** NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: **Licking** Township / City: **Monroe**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **Y** Date of last precipitation: **06/16/23** Quantity: **0.25**

Photograph Information: **Upstream, downstream, substrate**

Elevated Turbidity? (Y/N): **N** Canopy (% open): **50** **Overall Stability of BOTH Stream Banks (check one)**: Stable ☐ Moderately Stable ☑ Unstable ☐

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain: _____

Additional comments/description of pollution impacts: **Cattle movement and agriculture runoff**

BIOTIC EVALUATION

Performed? (Y/N): **Y** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) **N** Voucher? (Y/N) **N** Salamanders Observed? (Y/N) **N** Voucher? (Y/N) **N**

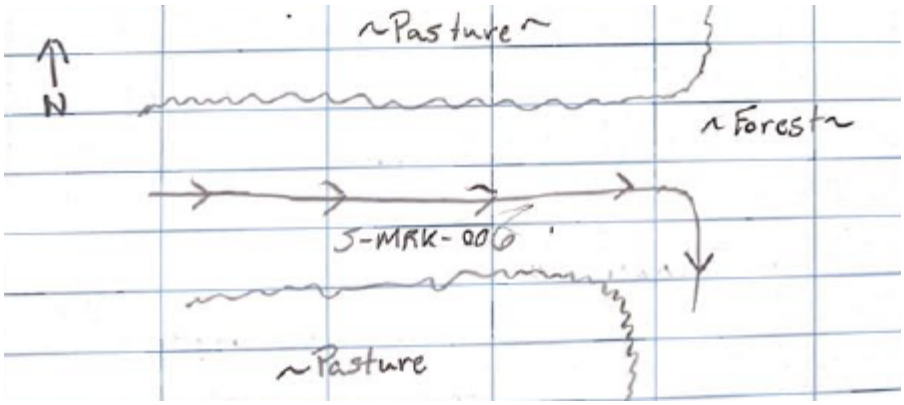
Frogs or Tadpoles Observed? (Y/N) **N** Voucher? (Y/N) **N** Aquatic Macroinvertebrates Observed? (Y/N) **N** Voucher? (Y/N) **N**

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW →



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Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3) **61**

SITE NAME/LOCATION: Vassell-Green Chapel

SITE NUMBER: NA | RIVER BASIN: | DRAINAGE AREA (mi²): 0.71

LENGTH OF STREAM REACH (ft): 250 | LAT.: 40.12841 | LONG.: -82.72470 | RIVER CODE: NA | RIVER MILE: NA

DATE: 06/16/23 | SCORER: MRK, AJH | COMMENTS:

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☑ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

Located in a forested strip of land adjacent to agricultural.

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS [16 pts]	0	☑	SILT [3 pt]	50
☐	BOULDER (>256 mm) [16 pts]	0	☐	LEAF PACK/WOODY DEBRIS [3 pts]	0
☐	BEDROCK [16 pt]	0	☐	FINE DETRITUS [3 pts]	15
☐	COBBLE (65-256 mm) [12 pts]	15	☐	CLAY or HARDPAN [0 pt]	0
☑	GRAVEL (2-64 mm) [9 pts]	20	☐	MUCK [0 pts]	0
☐	SAND (<2 mm) [6 pts]	0	☐	ARTIFICIAL [3 pts]	0

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 15 (A) | Substrate Percentage Check | (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 12 **TOTAL NUMBER OF SUBSTRATE TYPES:** 4

HHEI Metric Points

Substrate Max = 40

16

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐	> 30 centimeters [20 pts]	☑	> 5 cm - 10 cm [15 pts]
☐	> 22.5 - 30 cm [30 pts]	☐	< 5 cm [5 pts]
☐	> 10 - 22.5 cm [25 pts]	☐	NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS: **MAXIMUM POOL DEPTH** (Inches): 3.00

Pool Depth Max = 30

15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☑	> 4.0 meters (> 13') [30 pts]	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☐	> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	☐	≤ 1.0 m (<=3' 3") [5 pts]
☐	> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]		

COMMENTS: **AVERAGE BANKFULL WIDTH** (Feet): 16.00

Bankfull Width Max=30

30

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R	FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☑	☐	Moderate 5-10m	☑	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☑	Narrow <5m	☐	☑	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS:

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☑ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS:

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐	None	☑	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>3

STREAM GRADIENT ESTIMATE

☑ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☑ WWH Name: **Headwaters Raccoon Creek 050400060301** Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Jersey** NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: **Licking** Township / City: **Monroe**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **Y** Date of last precipitation: **06/16/23** Quantity: **0.25**

Photograph Information: **Upstream, downstream, substrate**

Elevated Turbidity? (Y/N): **N** Canopy (% open): **50** **Overall Stability of BOTH Stream Banks (check one)**: Stable ☐ Moderately Stable ☑ Unstable ☐

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain: _____

Additional comments/description of pollution impacts: _____

Agriculture runoff

BIOTIC EVALUATION

Performed? (Y/N): **Y** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) **N** Voucher? (Y/N) **N** Salamanders Observed? (Y/N) **N** Voucher? (Y/N) **N**

Frogs or Tadpoles Observed? (Y/N) **N** Voucher? (Y/N) **N** Aquatic Macroinvertebrates Observed? (Y/N) **Y** Voucher? (Y/N) **N**

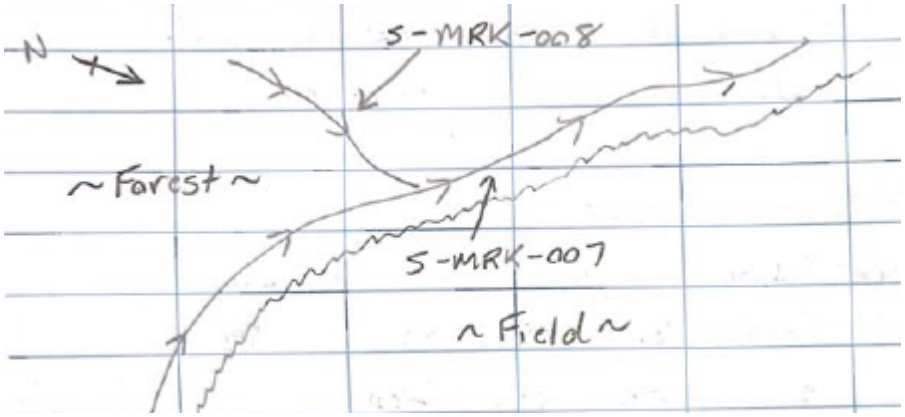
Comments Regarding Biology: _____

Ephemeroptera observed

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW ➔



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Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3) **37**

SITE NAME/LOCATION: Vassell-Green Chapel

SITE NUMBER: NA | RIVER BASIN: | DRAINAGE AREA (mi²): 0.01

LENGTH OF STREAM REACH (ft): 77 | LAT.: 40.12809 | LONG.: -82.72432 | RIVER CODE: NA | RIVER MILE: NA

DATE: 06/16/23 | SCORER: MRK, AJH | COMMENTS:

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☑ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

Located in a forested riparian area

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS [16 pts]	0	☑	SILT [3 pt]	30
☐	BOULDER (>256 mm) [16 pts]	0	☐	LEAF PACK/WOODY DEBRIS [3 pts]	0
☐	BEDROCK [16 pt]	0	☐	FINE DETRITUS [3 pts]	10
☐	COBBLE (65-256 mm) [12 pts]	35	☑	CLAY or HARDPAN [0 pt]	0
☐	GRAVEL (2-64 mm) [9 pts]	25	☐	MUCK [0 pts]	0
☐	SAND (<2 mm) [6 pts]	0	☐	ARTIFICIAL [3 pts]	0

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 35 **(A)** | Substrate Percentage Check | **(B)**

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 3 **TOTAL NUMBER OF SUBSTRATE TYPES:** 4

HHEI Metric Points

Substrate Max = 40

7

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐	> 30 centimeters [20 pts]	☐	> 5 cm - 10 cm [15 pts]
☐	> 22.5 - 30 cm [30 pts]	☑	< 5 cm [5 pts]
☐	> 10 - 22.5 cm [25 pts]	☐	NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS: **MAXIMUM POOL DEPTH** (Inches): 1.00

Pool Depth Max = 30

5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐	> 4.0 meters (> 13') [30 pts]	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☑	> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	☐	≤ 1.0 m (<=3' 3") [5 pts]
☐	> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]		

COMMENTS: **AVERAGE BANKFULL WIDTH** (Feet): 10.00

Bankfull Width Max=30

25

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R	FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☑	☑	Moderate 5-10m	☑	☑	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS:

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☑ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS:

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐	None	☑	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>3

STREAM GRADIENT ESTIMATE

☑ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☑ WWH Name: **Headwaters Raccoon Creek 050400060301** Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Jersey** NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: **Licking** Township / City: **Monroe**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **Y** Date of last precipitation: **06/16/23** Quantity: **0.25**

Photograph Information: **Upstream, downstream, substrate**

Elevated Turbidity? (Y/N): **N** Canopy (% open): **25** **Overall Stability of BOTH Stream Banks (check one)**: Stable ☐ Moderately Stable ☑ Unstable ☐

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain: _____

Additional comments/description of pollution impacts: **Agriculture runoff**

BIOTIC EVALUATION

Performed? (Y/N): **Y** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) **N** Voucher? (Y/N) **N** Salamanders Observed? (Y/N) **N** Voucher? (Y/N) **N**

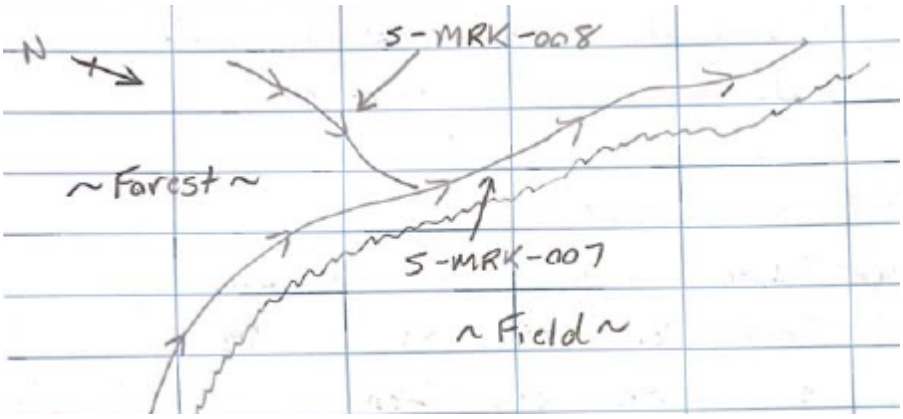
Frogs or Tadpoles Observed? (Y/N) **N** Voucher? (Y/N) **N** Aquatic Macroinvertebrates Observed? (Y/N) **Y** Voucher? (Y/N) **N**

Comments Regarding Biology: **Ephemeroptera observed**

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW →



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Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3) **69**

SITE NAME/LOCATION **Vassell-Green Chapel**

SITE NUMBER **NA** RIVER BASIN _____ DRAINAGE AREA (mi²) **1.54**

LENGTH OF STREAM REACH (ft) **250** LAT. **40.12950** LONG. **-82.73466** RIVER CODE **NA** RIVER MILE **NA**

DATE **06/16/23** SCORER **MRK, AJH** COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☑ RECOVERING ☐ RECENT OR NO RECOVERY

Perennial watercourse is located within an agricultural swale.

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS [16 pts]	0	☑	SILT [3 pt]	70
☐	BOULDER (>256 mm) [16 pts]	0	☐	LEAF PACK/WOODY DEBRIS [3 pts]	0
☐	BEDROCK [16 pt]	0	☐	FINE DETRITUS [3 pts]	10
☑	COBBLE (65-256 mm) [12 pts]	15	☐	CLAY or HARDPAN [0 pt]	0
☐	GRAVEL (2-64 mm) [9 pts]	5	☐	MUCK [0 pts]	0
☐	SAND (<2 mm) [6 pts]	0	☐	ARTIFICIAL [3 pts]	0

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **15** (A) Substrate Percentage Check (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **15** **TOTAL NUMBER OF SUBSTRATE TYPES:** **4**

HHEI Metric Points

Substrate Max = 40

19

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐	> 30 centimeters [20 pts]	☐	> 5 cm - 10 cm [15 pts]
☐	> 22.5 - 30 cm [30 pts]	☐	< 5 cm [5 pts]
☑	> 10 - 22.5 cm [25 pts]	☐	NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH** (Inches): **4.00**

Pool Depth Max = 30

25

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐	> 4.0 meters (> 13') [30 pts]	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☑	> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	☐	≤ 1.0 m (<=3' 3") [5 pts]
☐	> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]		

COMMENTS _____ **AVERAGE BANKFULL WIDTH** (Feet): **11.00**

Bankfull Width Max=30

25

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R	FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☑	☑	Open Pasture, Row Crop
☑	☑	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☑ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐	None	☐	1.0	☐	2.0	☐	3.0
☐	0.5	☑	1.5	☐	2.5	☐	>3

STREAM GRADIENT ESTIMATE

☑ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☑ WWH Name: **Duncan Run 050600011307** Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Jersey** NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: **Licking** Township / City: **Monroe**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **Y** Date of last precipitation: **06/16/23** Quantity: **0.25**

Photograph Information: **Upstream, downstream, substrate**

Elevated Turbidity? (Y/N): **N** Canopy (% open): **100** **Overall Stability of BOTH Stream Banks (check one)**: Stable ☐ Moderately Stable ☑ Unstable ☐

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain: _____

Additional comments/description of pollution impacts: _____

Agriculture runoff

BIOTIC EVALUATION

Performed? (Y/N): **Y** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) **N** Voucher? (Y/N) **N** Salamanders Observed? (Y/N) **N** Voucher? (Y/N) **N**

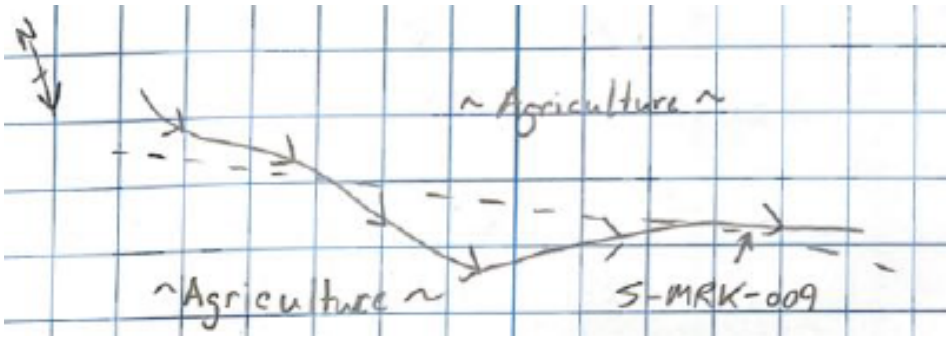
Frogs or Tadpoles Observed? (Y/N) **N** Voucher? (Y/N) **N** Aquatic Macroinvertebrates Observed? (Y/N) **N** Voucher? (Y/N) **N**

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW →



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Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3) **37**

SITE NAME/LOCATION **AEP Vassell-Green Chapel**

SITE NUMBER **NA** RIVER BASIN _____ DRAINAGE AREA (mi²) **3.74**

LENGTH OF STREAM REACH (ft) **123** LAT. **40.20370** LONG. **-82.77274** RIVER CODE **NA** RIVER MILE **NA**

DATE **06/23/23** SCORER **MRK, RBL** COMMENTS _____

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☑ RECOVERING ☐ RECENT OR NO RECOVERY

Channelized through a residential property

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS [16 pts]	0	☑	SILT [3 pt]	45
☐	BOULDER (>256 mm) [16 pts]	0	☐	LEAF PACK/WOODY DEBRIS [3 pts]	0
☐	BEDROCK [16 pt]	0	☐	FINE DETRITUS [3 pts]	10
☐	COBBLE (65-256 mm) [12 pts]	15	☐	CLAY or HARDPAN [0 pt]	0
☑	GRAVEL (2-64 mm) [9 pts]	20	☐	MUCK [0 pts]	0
☐	SAND (<2 mm) [6 pts]	10	☐	ARTIFICIAL [3 pts]	0

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock **15** (A) Substrate Percentage Check (B)

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: **12** **TOTAL NUMBER OF SUBSTRATE TYPES:** **5**

HHEI Metric Points

Substrate Max = 40

17

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐	> 30 centimeters [20 pts]	☐	> 5 cm - 10 cm [15 pts]
☐	> 22.5 - 30 cm [30 pts]	☑	< 5 cm [5 pts]
☐	> 10 - 22.5 cm [25 pts]	☐	NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS _____ **MAXIMUM POOL DEPTH** (Inches): **2.00**

Pool Depth Max = 30

5

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐	> 4.0 meters (> 13') [30 pts]	☑	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☐	> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	☐	≤ 1.0 m (<=3' 3") [5 pts]
☐	> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]		

COMMENTS _____ **AVERAGE BANKFULL WIDTH** (Feet): **3.50**

Bankfull Width Max=30

15

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH L	R	(Per Bank)	FLOODPLAIN QUALITY L	R	(Most Predominant per Bank)	L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☑	☑	Narrow <5m	☑	☑	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS _____

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☑ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS _____

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☑	None	☐	1.0	☐	2.0	☐	3.0
☐	0.5	☐	1.5	☐	2.5	☐	>3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☑ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☑ WWH Name: **UNT to Rattlesnake Creek** Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Jersey** NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: **Delaware** Township / City: **Trenton**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **Y** Date of last precipitation: **06/23/23** Quantity: **0.25**

Photograph Information: **Upstream, downstream, substrate**

Elevated Turbidity? (Y/N): **N** Canopy (% open): **50** **Overall Stability of BOTH Stream Banks (check one)**: Stable ☐ Moderately Stable ☑ Unstable ☐

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): **Y** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) **N** Voucher? (Y/N) **N** Salamanders Observed? (Y/N) **N** Voucher? (Y/N) **N**

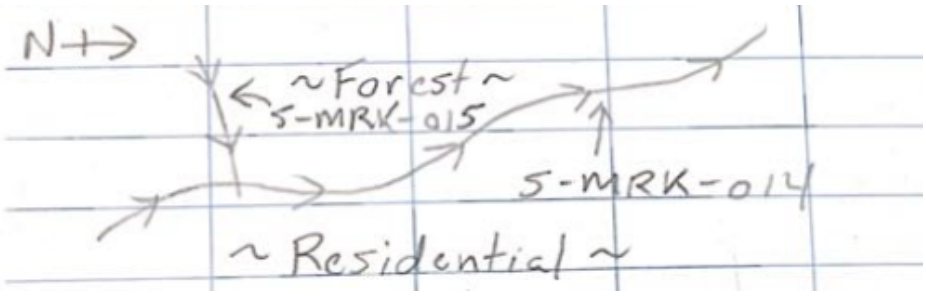
Frogs or Tadpoles Observed? (Y/N) **Y** Voucher? (Y/N) **N** Aquatic Macroinvertebrates Observed? (Y/N) **N** Voucher? (Y/N) **N**

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW →



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S-MRK-016 EPH

Modified Class I

Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3) **10**

SITE NAME/LOCATION: Vassell-Green Chapel / Licking Co., OH

SITE NUMBER: NA | RIVER BASIN: Duncan Run | DRAINAGE AREA (mi²): 0.01

LENGTH OF STREAM REACH (ft): 75 | LAT.: 40.13278 | LONG.: -82.74192 | RIVER CODE: NA | RIVER MILE: NA

DATE: 06/27/23 | SCORER: MRK, TW | COMMENTS:

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☑ RECOVERING ☐ RECENT OR NO RECOVERY

Channelized swale, drains agricultural field surface runoff

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS [16 pts]	0	☑	SILT [3 pt]	60
☐	BOULDER (>256 mm) [16 pts]	0	☐	LEAF PACK/WOODY DEBRIS [3 pts]	0
☐	BEDROCK [16 pt]	0	☐	FINE DETRITUS [3 pts]	0
☐	COBBLE (65-256 mm) [12 pts]	0	☑	CLAY or HARDPAN [0 pt]	40
☐	GRAVEL (2-64 mm) [9 pts]	0	☐	MUCK [0 pts]	0
☐	SAND (<2 mm) [6 pts]	0	☐	ARTIFICIAL [3 pts]	0

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 0 **(A)** | Substrate Percentage Check | **(B)**

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 3 **TOTAL NUMBER OF SUBSTRATE TYPES:** 2

HHEI Metric Points

Substrate Max = 40

5

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

- ☐ > 30 centimeters [20 pts]
- ☐ > 22.5 - 30 cm [30 pts]
- ☐ > 10 - 22.5 cm [25 pts]
- ☐ > 5 cm - 10 cm [15 pts]
- ☐ < 5 cm [5 pts]
- ☑ NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS **MAXIMUM POOL DEPTH** (Inches): 0.00

Pool Depth Max = 30

0

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

- ☐ > 4.0 meters (> 13') [30 pts]
- ☐ > 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]
- ☐ > 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]
- ☐ > 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
- ☑ ≤ 1.0 m (<=3' 3") [5 pts]

COMMENTS **AVERAGE BANKFULL WIDTH** (Feet): 2.00

Bankfull Width Max=30

5

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L R	FLOODPLAIN QUALITY (Most Predominant per Bank) L R	
☐ ☐ Wide >10m	☐ ☐ Mature Forest, Wetland	☐ ☐ Conservation Tillage
☐ ☐ Moderate 5-10m	☑ ☑ Immature Forest, Shrub or Old Field	☐ ☐ Urban or Industrial
☐ ☐ Narrow <5m	☐ ☐ Residential, Park, New Field	☐ ☐ Open Pasture, Row Crop
☐ ☐ None	☐ ☐ Fenced Pasture	☐ ☐ Mining or Construction

COMMENTS:

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

- ☐ Stream Flowing
- ☐ Subsurface flow with isolated pools (Interstitial)
- ☑ Moist Channel, isolated pools, no flow (Intermittent)
- ☐ Dry channel, no water (Ephemeral)

COMMENTS:

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

- ☑ None
- ☐ 0.5
- ☐ 1.0
- ☐ 1.5
- ☐ 2.0
- ☐ 2.5
- ☐ 3.0
- ☐ >3

STREAM GRADIENT ESTIMATE

☑ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☑ WWH Name: **HUC12- 050600011307 Duncan Run** Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Johnstown** NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: **Licking** Township / City: **3N, 15W**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **Y** Date of last precipitation: **06/26/23** Quantity: **0.10**

Photograph Information: **Upstream, downstream, substrate**

Elevated Turbidity? (Y/N): **N** Canopy (% open): **60** **Overall Stability of BOTH Stream Banks (check one)**: Stable ☐ Moderately Stable ☑ Unstable ☐

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): **Y** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) **N** Voucher? (Y/N) **N** Salamanders Observed? (Y/N) **N** Voucher? (Y/N) **N**

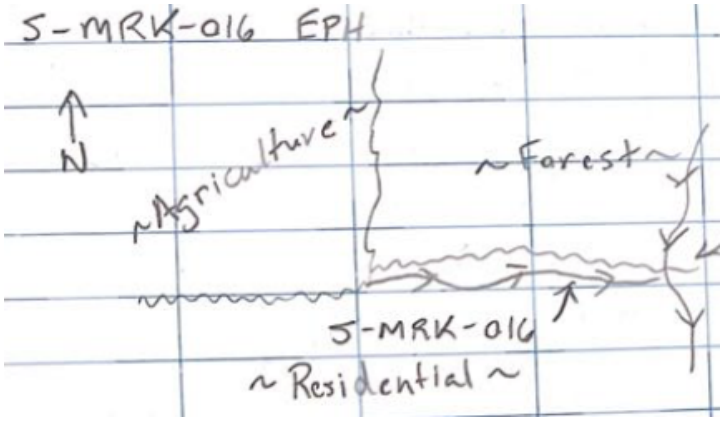
Frogs or Tadpoles Observed? (Y/N) **N** Voucher? (Y/N) **N** Aquatic Macroinvertebrates Observed? (Y/N) **N** Voucher? (Y/N) **N**

Comments Regarding Biology: _____

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW →



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S-MRK-017 INT

Mod. Class II

Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3) **50**

SITE NAME/LOCATION: AEP Vassell-Green Chapel

SITE NUMBER: NA | RIVER BASIN: Duncan Run | DRAINAGE AREA (mi²): 0.50

LENGTH OF STREAM REACH (ft): 1,400 | LAT.: 40.13478 | LONG.: -82.74849 | RIVER CODE: NA | RIVER MILE: NA

DATE: 06/27/23 | SCORER: MRK, TW | COMMENTS:

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☐ RECOVERED ☑ RECOVERING ☐ RECENT OR NO RECOVERY

Agricultural swale

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS [16 pts]	0	☑	SILT [3 pt]	60
☐	BOULDER (>256 mm) [16 pts]	0	☐	LEAF PACK/WOODY DEBRIS [3 pts]	0
☐	BEDROCK [16 pt]	0	☐	FINE DETRITUS [3 pts]	0
☐	COBBLE (65-256 mm) [12 pts]	0	☑	CLAY or HARDPAN [0 pt]	40
☐	GRAVEL (2-64 mm) [9 pts]	0	☐	MUCK [0 pts]	0
☐	SAND (<2 mm) [6 pts]	0	☐	ARTIFICIAL [3 pts]	0

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 0 **(A)** | Substrate Percentage Check | **(B)**

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 3 **TOTAL NUMBER OF SUBSTRATE TYPES:** 2

HHEI Metric Points

Substrate Max = 40

5

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐	> 30 centimeters [20 pts]	☑	> 5 cm - 10 cm [15 pts]
☐	> 22.5 - 30 cm [30 pts]	☐	< 5 cm [5 pts]
☐	> 10 - 22.5 cm [25 pts]	☐	NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS: **MAXIMUM POOL DEPTH** (Inches): 3.00

Pool Depth Max = 30

15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☑	> 4.0 meters (> 13') [30 pts]	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☐	> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	☐	≤ 1.0 m (<=3' 3") [5 pts]
☐	> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]		

COMMENTS: **AVERAGE BANKFULL WIDTH** (Feet): 15.00

Bankfull Width Max=30

30

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R	FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☐	☐	Moderate 5-10m	☐	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☐	Residential, Park, New Field	☑	☑	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS:

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☑ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS:

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☑ None ☐ 0.5 ☐ 1.0 ☐ 1.5 ☐ 2.0 ☐ 2.5 ☐ 3.0 ☐ >3

STREAM GRADIENT ESTIMATE

☑ Flat (0.5 ft/100 ft) ☐ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☑ WWH Name: **HUC12- 050600011307 Duncan Run** Distance from Evaluated Stream _____

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Johnstown** NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: **Licking** Township / City: **3N, 15W**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **Y** Date of last precipitation: **06/26/23** Quantity: **0.10**

Photograph Information: **Upstream, downstream, substrate**

Elevated Turbidity? (Y/N): **N** Canopy (% open): **100** **Overall Stability of BOTH Stream Banks (check one)**: Stable ☑ Moderately Stable ☐ Unstable ☐

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): **Y** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) **N** Voucher? (Y/N) **N** Salamanders Observed? (Y/N) **N** Voucher? (Y/N) **N**

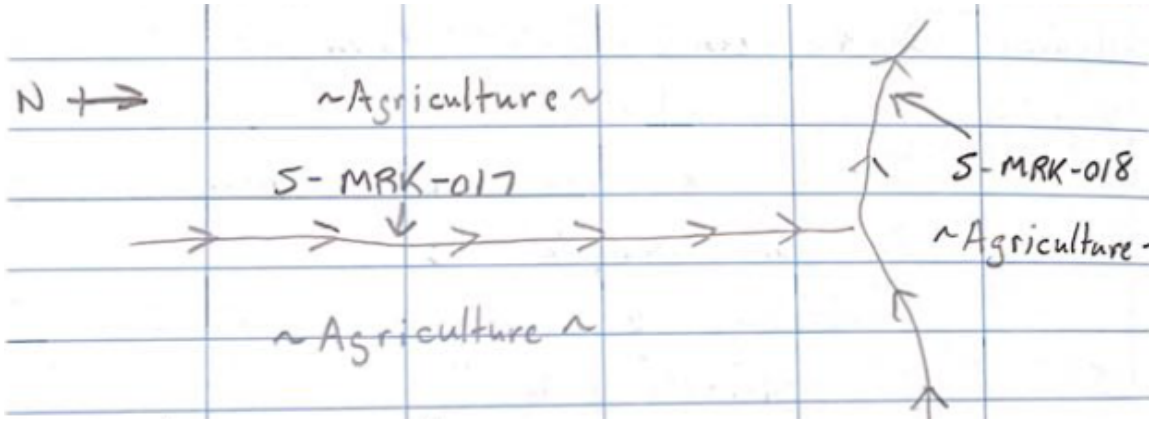
Frogs or Tadpoles Observed? (Y/N) **N** Voucher? (Y/N) **N** Aquatic Macroinvertebrates Observed? (Y/N) **Y** Voucher? (Y/N) **N**

Comments Regarding Biology: **Crawfish burrows observed**

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW →



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S-MRK-018 PER

Rating Fair

Qualitative Habitat Evaluation Index and Use Assessment Field Sheet

QHEI Score: 49

Stream & Location: Duncan Run, Licking Co., OH **RM:** _ _ _._ **Date:** 6-27-23

Scorers Full Name & Affiliation: MRK, TW/AECOM

River Code:_ _ _-_ _ _-_ _ _ **STORET #:**_ _ _ _ _ _ **Lat./ Long.:** (NAD 83 - decimal °) **Office verified location** ☐

1] SUBSTRATE

Check **ONLY Two** substrate *TYPE BOXES*; estimate % or note every type present

BEST TYPES	POOL	RIFFLE	OTHER TYPES	POOL	RIFFLE
☐ ☐ BLDR /SLABS [10]			☐ ☐ HARDPAN [4]		
☐ ☐ BOULDER [9]			☐ ☐ DETRITUS [3]		
☐ ☑ COBBLE [8]	25	25	☐ ☐ MUCK [2]		
☐ ☐ GRAVEL [7]	20	20	☑ ☐ SILT [2]	40	40
☐ ☐ SAND [6]	15	15	☐ ☐ ARTIFICIAL [0]		
☐ ☐ BEDROCK [5]					

(Score natural substrates; ignore sludge from point-sources)

NUMBER OF BEST TYPES: ☐ 4 or more [2] ☐ 3 or less [0]

Check ONE (*Or 2 & average*)

ORIGIN
- ☐ LIMESTONE [1]
- ☐ TILLS [1]
- ☑ WETLANDS [0]
- ☐ HARDPAN [0]
- ☐ SANDSTONE [0]
- ☐ RIP/RAP [0]
- ☐ LACUSTURINE [0]
- ☐ SHALE [-1]
- ☐ COAL FINES [-2]

SILT / EMBEDDEDNESS

QUALITY
- ☐ HEAVY [-2]
- ☑ MODERATE [-1]
- ☐ NORMAL [0]
- ☐ FREE [1]
- ☐ EXTENSIVE [-2]
- ☑ MODERATE [-1]
- ☐ NORMAL [0]
- ☐ NONE [1]

Comments

Substrate 8 *Maximum 20*

2] INSTREAM COVER

Indicate presence 0 to 3: **0**-Absent; **1**-Very small amounts or if more common of marginal quality; **2**-Moderate amounts, but not of highest quality or in small amounts of highest quality; **3**-Highest quality in moderate or greater amounts (e.g., very large boulders in deep or fast water, large diameter log that is stable, well developed rootwad in deep / fast water, or deep, well-defined, functional pools.

1 UNDERCUT BANKS [1]	___ POOLS > 70cm [2]	___ OXBOWS, BACKWATERS [1]
1 OVERHANGING VEGETATION [1]	___ ROOTWADS [1]	___ AQUATIC MACROPHYTES [1]
___ SHALLOWS (IN SLOW WATER) [1]	___ BOULDERS [1]	___ LOGS OR WOODY DEBRIS [1]
___ ROOTMATS [1]		

AMOUNT

Check ONE (*Or 2 & average*)
- ☐ EXTENSIVE >75% [11]
- ☑ MODERATE 25-75% [7]
- ☐ SPARSE 5-<25% [3]
- ☐ NEARLY ABSENT <5% [1]

Comments

Cover *Maximum 20* 9

3] CHANNEL MORPHOLOGY

Check ONE in each category (*Or 2 & average*)

SINUOSITY
- ☐ HIGH [4]
- ☑ MODERATE [3]
- ☐ LOW [2]
- ☐ NONE [1]

DEVELOPMENT
- ☐ EXCELLENT [7]
- ☑ GOOD [5]
- ☐ FAIR [3]
- ☐ POOR [1]

CHANNELIZATION
- ☐ NONE [6]
- ☑ RECOVERED [4]
- ☐ RECOVERING [3]
- ☐ RECENT OR NO RECOVERY [1]

STABILITY
- ☐ HIGH [3]
- ☑ MODERATE [2]
- ☐ LOW [1]

Comments

Channel *Maximum 20* 14

4] BANK EROSION AND RIPARIAN ZONE

Check **ONE** in each category for *EACH BANK* (*Or 2 per bank & average*)

River right looking downstream

EROSION L	EROSION R	
☐	☐	NONE / LITTLE [3]
☑	☑	MODERATE [2]
☐	☐	HEAVY / SEVERE [1]

RIPARIAN WIDTH L	RIPARIAN WIDTH R	
☐	☐	WIDE > 50m [4]
☐	☐	MODERATE 10-50m [3]
☐	☐	NARROW 5-10m [2]
☐	☐	VERY NARROW < 5m [1]
☑	☑	NONE [0]

FLOOD PLAIN QUALITY L	FLOOD PLAIN QUALITY R	
☐	☐	FOREST, SWAMP [3]
☐	☐	SHRUB OR OLD FIELD [2]
☐	☐	RESIDENTIAL, PARK, NEW FIELD [1]
☐	☐	FENCED PASTURE [1]
☑	☑	OPEN PASTURE, ROWCROP [0]

☐	☐	CONSERVATION TILLAGE [1]
☐	☐	URBAN OR INDUSTRIAL [0]
☐	☐	MINING / CONSTRUCTION [0]

Indicate predominant land use(s) past 100m riparian.

Comments

Riparian *Maximum 10* 2

5] POOL / GLIDE AND RIFFLE / RUN QUALITY

MAXIMUM DEPTH

Check **ONE** (*ONLY!*)
- ☐ > 1m [6]
- ☐ 0.7-<1m [4]
- ☐ 0.4-<0.7m [2]
- ☐ 0.2-<0.4m [1]
- ☑ < 0.2m [0]

CHANNEL WIDTH

Check ONE (*Or 2 & average*)
- ☑ POOL WIDTH > RIFFLE WIDTH [2]
- ☐ POOL WIDTH = RIFFLE WIDTH [1]
- ☐ POOL WIDTH > RIFFLE WIDTH [0]

CURRENT VELOCITY

Check ALL that apply
- ☐ TORRENTIAL [-1]
- ☐ VERY FAST [1]
- ☐ FAST [1]
- ☑ MODERATE [1]
- ☐ SLOW [1]
- ☐ INTERSTITIAL [-1]
- ☐ INTERMITTENT [-2]
- ☑ EDDIES [1]

Indicate for reach - pools and riffles.

Recreation Potential
Primary Contact
Secondary Contact
(circle one and comment on back)

Comments

Pool / Current *Maximum 12* 4

Indicate for functional riffles; Best areas must be large enough to support a population of riffle-obligate species: Check ONE (*Or 2 & average*). ☐ NO RIFFLE [metric=0]

RIFFLE DEPTH
- ☐ BEST AREAS > 10cm [2]
- ☐ BEST AREAS 5-10cm [1]
- ☑ BEST AREAS < 5cm [metric=0]

RUN DEPTH
- ☐ MAXIMUM > 50cm [2]
- ☑ MAXIMUM < 50cm [1]

RIFFLE / RUN SUBSTRATE
- ☐ STABLE (e.g., Cobble, Boulder) [2]
- ☑ MOD. STABLE (e.g., Large Gravel) [1]
- ☐ UNSTABLE (e.g., Fine Gravel, Sand) [0]

RIFFLE / RUN EMBEDDEDNESS
- ☐ NONE [2]
- ☐ LOW [1]
- ☑ MODERATE [0]
- ☐ EXTENSIVE [-1]

Comments

Riffle / Run *Maximum 8* 2

6] GRADIENT

DRAINAGE AREA (44 mi²)

ft/mi)
- ☐ VERY LOW - LOW [2-4]
- ☑ MODERATE [6-10]
- ☐ HIGH - VERY HIGH [10-6]

%POOL: 10 **%GLIDE:** **%RUN:** 70 **%RIFFLE:** 20

Gradient *Maximum 10* 6

A] SAMPLED REACH

Check ALL that apply

Comment RE: Reach consistency/ Is reach typical of steam?*, Recreation/* Observed - Inferred, *Other/* Sampling observations, Concerns, Access directions, etc.

METHOD

- [ ] BOAT
- [ ] WADE
- [ ] L. LINE
- [x] OTHER

STAGE

1st -sample pass- 2nd

- [ ] HIGH [ ]
- [ ] UP [ ]
- [x] NORMAL [ ]
- [ ] LOW [ ]
- [ ] DRY [ ]

DISTANCE

- [ ] 0.5 Km
- [ ] 0.2 Km
- [ ] 0.15 Km
- [ ] 0.12 Km
- [ ] OTHER

200 feet

CLARITY

1st --sample pass-- 2nd

- [ ] < 20 cm [ ]
- [ ] 20-<40 cm [ ]
- [ ] 40-70 cm [ ]
- [ ] > 70 cm/ CTB [ ]
- [ ] SECCHI DEPTH [ ]

CANOPY

- [x] > 85%- OPEN
- [ ] 55%-<85%
- [ ] 30%-<55%
- [ ] 10%-<30%
- [ ] <10%- CLOSED

1st pass _____ cm

2nd _____ cm

C] REC

B] AESTHETIC

- [x] NUISANCE ALGAE
- [ ] INVASIVE MACROPHYTES
- [ ] EXCESS TURBIDITY
- [ ] DISCOLORATION
- [ ] FOAM / SCUM
- [ ] OIL SHEEN
- [ ] TRASH / LITTER
- [ ] NUISANCE ODOR
- [ ] SLUDGE DEPOSITS
- [ ] CSOs/SSOs/OUTFALLS

ION

AREA DEPTH

POOL: [ ] >100ft2 [ ] >3ft

D] MAINTENANCE

PUBLIC / PRIVATE / BOTH / NA
ACTIVE / HISTORIC / BOTH / NA
YOUNG-SUCCESSION-OLD
SPRAY / SNAG / REMOVED
MODIFIED / DIPPED OUT / NA
LEVEED / ONE SIDED
RELOCATED / CUTOFFS
MOVING-BEDLOAD-STABLE
ARMOURED / SLUMPS
ISLANDS / SCOURED
IMPOUNDED / DESICCATED
FLOOD CONTROL / DRAINAGE

Circle some & *COMMENT*

E] ISSUES

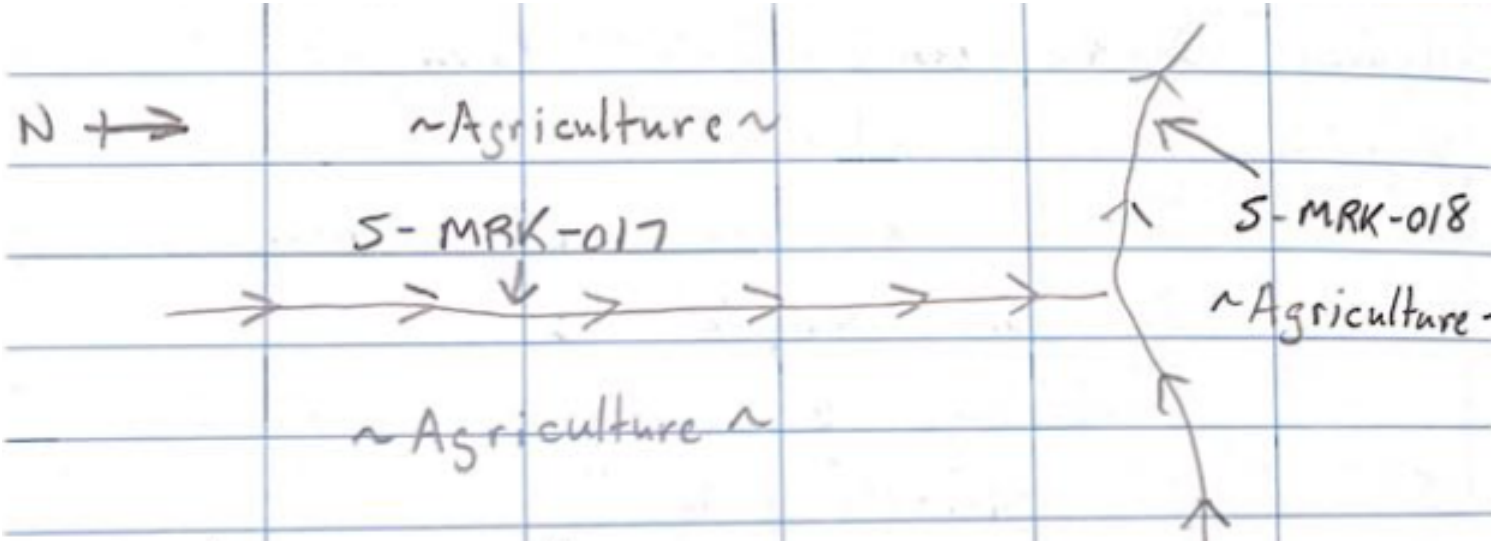
WWTP / CSO / NPDES / INDUSTRY
HARDENED / URBAN / DIRT&GRIME
CONTAMINATED / LANDFILL
BMPs-CONSTRUCTION-SEDIMENT
LOGGING / IRRIGATION / COOLING
BANK / EROSION / SURFACE
FALSE BANK / MANURE / LAGOON
WASH H_20 / TILE / H_20 TABLE
ACID / MINE / QUARRY / FLOW
NATURAL / WETLAND / STAGNANT
PARK / GOLF / LAWN / HOME
ATMOSPHERE / DATA PAUCITY

F] MEASUREMENTS

$\bar{x}$ width 7'
$\bar{x}$ depth 4"
max. depth
$\bar{x}$ bankfull width 15'
bankfull $\bar{x}$ depth 7'
W/D ratio
bankfull max. depth
floodprone x^2 width
entrench. ratio

Le *Tree:*

Stream Drawing:



Headwater Habitat Evaluation Index Field Form

HHEI Score (sum of metrics 1+2+3) **55**

SITE NAME/LOCATION: Vassell-Green Chapel

SITE NUMBER: NA | RIVER BASIN: Scioto | DRAINAGE AREA (mi²): 0.60

LENGTH OF STREAM REACH (ft): | LAT.: 40.22408 | LONG.: -82.84764 | RIVER CODE: NA | RIVER MILE: NA

DATE: 09/11/23 | SCORER: MRK, KRS | COMMENTS: Perennial Stream

NOTE: Complete All Items On This Form - Refer to "Field Evaluation Manual for Ohio's PHWH Streams" for Instructions

STREAM CHANNEL MODIFICATIONS: ☐ NONE / NATURAL CHANNEL ☑ RECOVERED ☐ RECOVERING ☐ RECENT OR NO RECOVERY

1. SUBSTRATE (Estimate percent of every type of substrate present. Check *ONLY* two predominant substrate *TYPE* boxes (Max of 32). Add total number of significant substrate types found (Max of 8). Final metric score is sum of boxes A & B.

TYPE		PERCENT	TYPE		PERCENT
☐	BLDR SLABS [16 pts]	0	☐	SILT [3 pt]	25
☐	BOULDER (>256 mm) [16 pts]	0	☐	LEAF PACK/WOODY DEBRIS [3 pts]	15
☐	BEDROCK [16 pt]	0	☐	FINE DETRITUS [3 pts]	0
☑	COBBLE (65-256 mm) [12 pts]	35	☐	CLAY or HARDPAN [0 pt]	0
☐	GRAVEL (2-64 mm) [9 pts]	10	☐	MUCK [0 pts]	0
☐	SAND (<2 mm) [6 pts]	15	☐	ARTIFICIAL [3 pts]	0

Total of Percentages of Bldr Slabs, Boulder, Cobble, Bedrock: 35 **(A)** | Substrate Percentage Check | **(B)**

SCORE OF TWO MOST PREDOMINATE SUBSTRATE TYPES: 15 **TOTAL NUMBER OF SUBSTRATE TYPES:** 5

HHEI Metric Points

Substrate Max = 40

20

A + B

2. Maximum Pool Depth ***(Measure the maximum pool depth within the 61 meter (200 ft)*** evaluation reach at the time of evaluation. Avoid plunge pools from road culverts or storm water pipes) (Check *ONLY* one box):

☐	> 30 centimeters [20 pts]	☑	> 5 cm - 10 cm [15 pts]
☐	> 22.5 - 30 cm [30 pts]	☐	< 5 cm [5 pts]
☐	> 10 - 22.5 cm [25 pts]	☐	NO WATER OR MOIST CHANNEL [0 pts]

COMMENTS: **MAXIMUM POOL DEPTH** (Inches): 2.00

Pool Depth Max = 30

15

3. BANK FULL WIDTH (Measured as the average of 3-4 measurements) **(Check *ONLY* one box):**

☐	> 4.0 meters (> 13') [30 pts]	☐	> 1.0 m - 1.5 m (> 3' 3" - 4' 8") [15 pts]
☐	> 3.0 m - 4.0 m (> 9' 7" - 13') [25 pts]	☐	≤ 1.0 m (<=3' 3") [5 pts]
☑	> 1.5 m - 3.0 m (> 9' 7" - 4' 8") [20 pts]		

COMMENTS: BF = 6'w x 3.25'd **AVERAGE BANKFULL WIDTH** (Feet): 6.00

Bankfull Width Max=30

20

This information must also be completed

RIPARIAN ZONE AND FLOODPLAIN QUALITY ☆NOTE: River Left (L) and Right (R) as looking downstream☆

RIPARIAN WIDTH (Per Bank) L	R	FLOODPLAIN QUALITY (Most Predominant per Bank) L	R		L	R	
☐	☐	Wide >10m	☐	☐	Mature Forest, Wetland	☐	☐	Conservation Tillage
☑	☑	Moderate 5-10m	☑	☐	Immature Forest, Shrub or Old Field	☐	☐	Urban or Industrial
☐	☐	Narrow <5m	☐	☑	Residential, Park, New Field	☐	☐	Open Pasture, Row Crop
☐	☐	None	☐	☐	Fenced Pasture	☐	☐	Mining or Construction

COMMENTS:

FLOW REGIME *(At Time of Evaluation)* (Check *ONLY* one box):

☑ Stream Flowing
☐ Subsurface flow with isolated pools (Interstitial)
☐ Moist Channel, isolated pools, no flow (Intermittent)
☐ Dry channel, no water (Ephemeral)

COMMENTS:

SINUOSITY (Number of bends per 61 m (200 ft) of channel) (Check *ONLY* one box):

☐ None	☐ 1.0	☑ 2.0	☐ 3.0
☐ 0.5	☐ 1.5	☐ 2.5	☐ >3

STREAM GRADIENT ESTIMATE

☐ Flat (0.5 ft/100 ft) ☑ Flat to Moderate ☐ Moderate (2 ft/100 ft) ☐ Moderate to Severe ☐ Severe (10 ft/100 ft)

ADDITIONAL STREAM INFORMATION (This Information Must Also be Completed):

QHEI PERFORMED? - ☐ Yes ☑ No QHEI Score _____ (If Yes, Attach Completed QHEI Form)

DOWNSTREAM DESIGNATED USE(S)

☑ WWH Name: **Big Walnut Creek** Distance from Evaluated Stream **1.20**

☐ CWH Name: _____ Distance from Evaluated Stream _____

☐ EWH Name: _____ Distance from Evaluated Stream _____

MAPPING: ATTACH COPIES OF MAPS, INCLUDING THE ENTIRE WATERSHED AREA. CLEARLY MARK THE SITE LOCATION

USGS Quadrangle Name: **Sunbury** NRCS Soil Map Page: _____ NRCS Soil Map Stream Order _____

County: **Delaware** Township / City: **Trenton**

MISCELLANEOUS

Base Flow Conditions? (Y/N): **Y** Date of last precipitation: **09/10/23** Quantity: **0.10**

Photograph Information: **Upstream, downstream, substrate**

Elevated Turbidity? (Y/N): **N** Canopy (% open): **10** **Overall Stability of BOTH Stream Banks (check one)**: Stable ☐ Moderately Stable ☑ Unstable ☐

Were samples collected for water chemistry? (Y/N): **N** (Note lab sample no. or id. and attach results) Lab Number: _____

Field Measures: Temp (°C) _____ Dissolved Oxygen (mg/l) _____ pH (S.U.) _____ Conductivity (µmhos/cm) _____

Is the sampling reach representative of the stream (Y/N) **Y** If not, please explain: _____

Additional comments/description of pollution impacts: _____

BIOTIC EVALUATION

Performed? (Y/N): **Y** (If Yes, Record all observations. Voucher collections optional. NOTE: all voucher samples must be labeled with the site ID number. Include appropriate field data sheets from the Primary Headwater Habitat Assessment Manual)

Fish Observed? (Y/N) **Y** Voucher? (Y/N) **N** Salamanders Observed? (Y/N) **N** Voucher? (Y/N) **N**

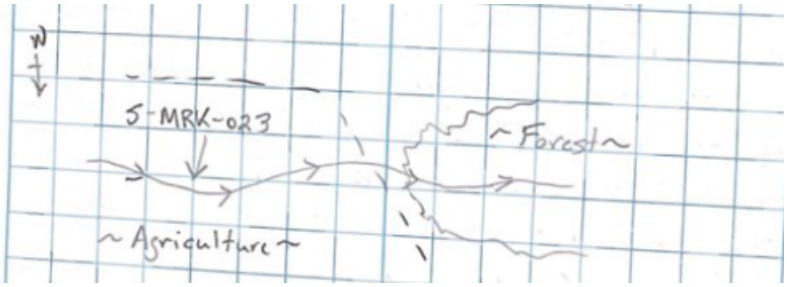
Frogs or Tadpoles Observed? (Y/N) **N** Voucher? (Y/N) **N** Aquatic Macroinvertebrates Observed? (Y/N) **N** Voucher? (Y/N) **N**

Comments Regarding Biology: **Fish were observed.**

DRAWING AND NARRATIVE DESCRIPTION OF STREAM REACH (This must be completed):

Include important landmarks and other features of interest for site evaluation and a narrative description of the stream's location

FLOW →



Save as pdf Reset Form

AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Streams Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

S-CRW-001 **Date:** June 7, 2023 **Description:** Intermittent Stream Facing Upstream	

S-CRW-001 **Date:** June 7, 2023 **Description:** Intermittent Stream Facing Downstream	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

S-CRW-001 **Date:** June 7, 2023 **Description:** Intermittent Stream Facing Substrate	

S-MRK-001 **Date:** June 14, 2023 **Description:** Ephemeral Stream Facing Upstream	

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PHOTOGRAPHIC RECORD
Streams Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

S-MRK-001 **Date:** June 14, 2023 **Description:** Ephemeral Stream Facing Downstream	

S-MRK-001 **Date:** June 14, 2023 **Description:** Ephemeral Stream Facing Substrate	

Client Name:	**Site Location:**	**Project No.**
AEP	Vassell - Green Chapel North Project	60702685

S-MRK-002
Date: June 14, 2023
Description: Intermittent Stream Facing Upstream



S-MRK-002
Date: June 14, 2023
Description: Intermittent Stream Facing Downstream



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PHOTOGRAPHIC RECORD
Streams Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

S-MRK-002

Date:

June 14, 2023

Description:

Intermittent Stream

Facing Substrate



S-MRK-005

Date:

June 15, 2023

Description:

Perennial Stream

Facing Upstream



Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

S-MRK-005
Date: June 15, 2023
Description: Perennial Stream Facing Downstream



S-MRK-005
Date: June 15, 2023
Description: Perennial Stream Facing Substrate



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PHOTOGRAPHIC RECORD
Streams Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

S-MRK-006 **Date:** June 16, 2023 **Description:** Intermittent Stream Facing Upstream	

S-MRK-006 **Date:** June 16, 2023 **Description:** Intermittent Stream Facing Downstream	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

S-MRK-006 **Date:** June 16, 2023 **Description:** Intermittent Stream Facing Substrate	

S-MRK-007 **Date:** June 16, 2023 **Description:** Perennial Stream Facing Upstream	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

S-MRK-007	
Date: June 16, 2023	
Description: Perennial Stream Facing Downstream	

S-MRK-007	
Date: June 16, 2023	
Description: Perennial Stream Facing Substrate	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

S-MRK-008 **Date:** June 16, 2023 **Description:** Intermittent Stream Facing Upstream	

S-MRK-008 **Date:** June 16, 2023 **Description:** Intermittent Stream Facing Downstream	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

S-MRK-008 **Date:** June 16, 2023 **Description:** Intermittent Stream Facing Substrate	

S-MRK-009 x1 **Date:** June 16, 2023 **Description:** Perennial Stream Facing Upstream	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

S-MRK-009 x1 **Date:** June 16, 2023 **Description:** Perennial Stream Facing Downstream	

S-MRK-009 x1 **Date:** June 16, 2023 **Description:** Perennial Stream Facing Substrate	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

S-MRK-009 x2 **Date:** June 16, 2023 **Description:** Perennial Stream Facing Upstream	

S-MRK-009 x2 **Date:** June 16, 2023 **Description:** Perennial Stream Facing Downstream	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

S-MRK-009 x2	
Date: June 16, 2023	
Description: Perennial Stream Facing Substrate	

S-MRK-015	
Date: June 23, 2023	
Description: Perennial Stream Facing Upstream	

Client Name:	**Site Location:**	**Project No.**
AEP	Vassell - Green Chapel North Project	60702685

S-MRK-015
Date:
September 23, 2023
Description:
Perennial Stream
Facing Downstream



S-MRK-015
Date:
September 23, 2023
Description:
Perennial Stream
Facing Substrate



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PHOTOGRAPHIC RECORD

Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-011
Date: June 22, 2023
Description: Wetland Data Point PEM Facing Soil



W-MRK-012
Date: June 26, 2023
Description: Wetland Data Point PFO Facing North



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PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-012
Date: June 26, 2023
Description: Wetland Data Point PFO Facing East



W-MRK-012
Date: June 26, 2023
Description: Wetland Data Point PFO Facing South



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PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-012

Date:

June 26, 2023

Description:

Wetland Data Point

PFO

Facing West



W-MRK-012

Date:

June 26, 2023

Description:

Wetland Data Point

PFO

Facing Soil



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PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

W-MRK-013
Date: June 26, 2023
Description: Wetland Data Point PFO Facing North



W-MRK-013
Date: June 26, 2023
Description: Wetland Data Point PFO Facing East



W-MRK-013

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PHOTOGRAPHIC RECORD
Wetland Data Point Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell – Green Chapel North Project	60702685

Date:

June 26, 2023

Description:

Wetland Data Point

PFO

Facing South



W-MRK-013

Date:

June 26, 2023

Description:

Wetland Data Point

PFO

Facing West



Case No. 24-0014-EL-BLN

Part 8 of 9

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PHOTOGRAPHIC RECORD
Streams Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

S-MRK-016

Date:

June 27, 2023

Description:

Ephemeral Stream

Facing Upstream



S-MRK-016

Date:

June 27, 2023

Description:

Ephemeral Stream

Facing Downstream



S-MRK-016 **Date:** June 27, 2023 **Description:** Ephemeral Stream Facing Substrate	

S-MRK-017 **Date:** June 27, 2023 **Description:** Intermittent Stream Facing Upstream	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

S-MRK-017 **Date:** June 27, 2023 **Description:** Intermittent Stream Facing Downstream	

S-MRK-017 **Date:** June 27, 2023 **Description:** Intermittent Stream Facing Substrate	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

S-MRK-018	
Date: June 27, 2023	
Description: Perennial Stream Facing Upstream	

S-MRK-018	
Date: June 27, 2023	
Description: Perennial Stream Facing Downstream	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

S-MRK-018 **Date:** June 27, 2023 **Description:** Perennial Stream Facing Substrate	

S-MRK-019 **Date:** June 27, 2023 **Description:** Perennial Stream Facing Upstream	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

S-MRK-019
Date: June 27, 2023
Description: Perennial Stream Facing Downstream



S-MRK-019
Date: June 27, 2023
Description: Perennial Stream Facing Substrate



Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

S-MRK-023
Date: September 11, 2023
Description: Perennial Stream Facing Upstream



S-MRK-023
Date: September 11, 2023
Description: Perennial Stream Facing Downstream



AECOM Imagine it. Delivered.	**PHOTOGRAPHIC RECORD** **Streams Photograph Record**	
Client Name: AEP	**Site Location:** Vassell - Green Chapel North Project	**Project No.** 60702685

S-MRK-023 **Date:** September 11, 2023 **Description:** Perennial Stream Facing Substrate	

APPENDIX C

POND PHOTOGRAPHIC RECORD

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PHOTOGRAPHIC RECORD
Ponds Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

Pond-MRK-003 **Date:** September 15, 2023 **Description:** Pond Facing North	

Pond-MRK-004 **Date:** September 15, 2023 **Description:** Pond Facing East	

APPENDIX D

UPLAND DRAINAGE FEATURE PHOTOGRAPHIC RECORD

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PHOTOGRAPHIC RECORD
Upland Drainage Feature (UDF) Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

UDF-CRW-002 **Date:** June 7, 2023 **Description:** Upland Drainage Feature Facing Upstream	

UDF-CRW-002 **Date:** June 7, 2023 **Description:** Upland Drainage Feature Facing Downstream	

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PHOTOGRAPHIC RECORD
Upland Drainage Feature (UDF) Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

UDF-CRW-002 **Date:** June 7, 2023 **Description:** Upland Drainage Feature Facing Substrate	

UDF-MRK-001 **Date:** June 14, 2023 **Description:** Upland Drainage Feature Facing East	

AECOM Imagine it. Delivered.	**PHOTOGRAPHIC RECORD** **Upland Drainage Feature (UDF)** **Photograph Record**	
Client Name: AEP	**Site Location:** Vassell - Green Chapel North Project	**Project No.** 60702685

UDF-MRK-001 **Date:** June 14, 2023 **Description:** Upland Drainage Feature Facing West	

UDF-MRK-001 **Date:** June 14, 2023 **Description:** Upland Drainage Feature Facing Substrate	

AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Upland Drainage Feature (UDF) Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

UDF-MRK-004	
Date: June 15, 2023	
Description: Upland Drainage Feature Facing East	

UDF-MRK-004	
Date: June 15, 2023	
Description: Upland Drainage Feature Facing West	

AECOM Imagine it. Delivered.	**PHOTOGRAPHIC RECORD** **Upland Drainage Feature (UDF)** **Photograph Record**	
Client Name: AEP	**Site Location:** Vassell - Green Chapel North Project	**Project No.** 60702685

UDF-MRK-004 **Date:** June 15, 2023 **Description:** Upland Drainage Feature Facing Substrate	

UDF-MRK-005 **Date:** June 15, 2023 **Description:** Upland Drainage Feature Facing East	

AECOM Imagine it. Delivered.	**PHOTOGRAPHIC RECORD** **Upland Drainage Feature (UDF)** **Photograph Record**	
Client Name: AEP	**Site Location:** Vassell - Green Chapel North Project	**Project No.** 60702685

UDF-MRK-005 **Date:** June 15, 2023 **Description:** Upland Drainage Feature Facing West	

UDF-MRK-005 **Date:** June 15, 2023 **Description:** Upland Drainage Feature Facing Substrate	

AECOM Imagine it. Delivered.	PHOTOGRAPHIC RECORD Upland Drainage Feature (UDF) Photograph Record	
Client Name: AEP	**Site Location:** Vassell - Green Chapel North Project	**Project No.** 60702685

UDF-MRK-006 **Date:** June 15, 2023 **Description:** Upland Drainage Feature Facing North	

UDF-MRK-006 **Date:** June 15, 2023 **Description:** Upland Drainage Feature Facing South	

AECOM Imagine it. Delivered.	**PHOTOGRAPHIC RECORD** **Upland Drainage Feature (UDF)** **Photograph Record**	
Client Name: AEP	**Site Location:** Vassell - Green Chapel North Project	**Project No.** 60702685

UDF-MRK-006 **Date:** June 15, 2023 **Description:** Upland Drainage Feature Facing Substrate	

UDF-MRK-007 **Date:** June 15, 2023 **Description:** Upland Drainage Feature Facing Northwest	

AECOM Imagine it. Delivered.	**PHOTOGRAPHIC RECORD** **Upland Drainage Feature (UDF)** **Photograph Record**	
Client Name: AEP	**Site Location:** Vassell - Green Chapel North Project	**Project No.** 60702685

UDF-MRK-007 **Date:** June 15, 2023 **Description:** Upland Drainage Feature Facing Southeast	

UDF-MRK-007 **Date:** June 15, 2023 **Description:** Upland Drainage Feature Facing Substrate	

AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Upland Drainage Feature (UDF) Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

UDF-MRK-009 **Date:** June 16, 2023 **Description:** Upland Drainage Feature Facing North	

UDF-MRK-009 **Date:** June 16, 2023 **Description:** Upland Drainage Feature Facing South	

AECOM Imagine it. Delivered.	**PHOTOGRAPHIC RECORD** **Upland Drainage Feature (UDF)** **Photograph Record**	
Client Name: AEP	**Site Location:** Vassell - Green Chapel North Project	**Project No.** 60702685

UDF-MRK-009 **Date:** June 16, 2023 **Description:** Upland Drainage Feature Facing Substrate	

UDF-MRK-010 **Date:** June 16, 2023 **Description:** Upland Drainage Feature Facing East	

AECOM Imagine it. Delivered.	**PHOTOGRAPHIC RECORD** **Upland Drainage Feature (UDF)** **Photograph Record**	
Client Name: AEP	**Site Location:** Vassell - Green Chapel North Project	**Project No.** 60702685

UDF-MRK-010 **Date:** June 16, 2023 **Description:** Upland Drainage Feature Facing West	

UDF-MRK-010 **Date:** June 16, 2023 **Description:** Upland Drainage Feature Facing Substrate	

AECOM Imagine it. Delivered.	**PHOTOGRAPHIC RECORD** **Upland Drainage Feature (UDF)** **Photograph Record**	
Client Name: AEP	**Site Location:** Vassell - Green Chapel North Project	**Project No.** 60702685

UDF-MRK-011 **Date:** June 16, 2023 **Description:** Upland Drainage Feature Facing East	

UDF-MRK-011 **Date:** June 16, 2023 **Description:** Upland Drainage Feature Facing West	

AECOM Imagine it. Delivered.	**PHOTOGRAPHIC RECORD** **Upland Drainage Feature (UDF)** **Photograph Record**	
Client Name: AEP	**Site Location:** Vassell - Green Chapel North Project	**Project No.** 60702685

UDF-MRK-011 **Date:** June 16, 2023 **Description:** Upland Drainage Feature Facing Substrate	

UDF-MRK-019 **Date:** June 22, 2023 **Description:** Upland Drainage Feature Facing North	

AECOM Imagine it. Delivered.	**PHOTOGRAPHIC RECORD** **Upland Drainage Feature (UDF)** **Photograph Record**	
Client Name: AEP	**Site Location:** Vassell - Green Chapel North Project	**Project No.** 60702685

UDF-MRK-019 **Date:** June 22, 2023 **Description:** Upland Drainage Feature Facing South	

UDF-MRK-019 **Date:** June 22, 2023 **Description:** Upland Drainage Feature Facing Substrate	

AECOM Imagine it. Delivered.	**PHOTOGRAPHIC RECORD** **Upland Drainage Feature (UDF)** **Photograph Record**	
Client Name: AEP	**Site Location:** Vassell - Green Chapel North Project	**Project No.** 60702685

UDF-MRK-020 **Date:** June 26, 2023 **Description:** Upland Drainage Feature Facing East	

UDF-MRK-020 **Date:** June 26, 2023 **Description:** Upland Drainage Feature Facing West	

AECOM Imagine it. Delivered.	**PHOTOGRAPHIC RECORD** **Upland Drainage Feature (UDF)** **Photograph Record**	
Client Name: AEP	**Site Location:** Vassell - Green Chapel North Project	**Project No.** 60702685

UDF-MRK-020 **Date:** June 26, 2023 **Description:** Upland Drainage Feature Facing Substrate	

UDF-MRK-027 **Date:** September 14, 2023 **Description:** Upland Drainage Feature Facing Northeast	

AECOM Imagine it. Delivered.	**PHOTOGRAPHIC RECORD** **Upland Drainage Feature (UDF)** **Photograph Record**	
Client Name: AEP	**Site Location:** Vassell - Green Chapel North Project	**Project No.** 60702685

UDF-MRK-027 **Date:** September 14, 2023 **Description:** Upland Drainage Feature Facing Southwest	

UDF-MRK-027 **Date:** September 14, 2023 **Description:** Upland Drainage Feature Facing Substrate	

AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Upland Drainage Feature (UDF) Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

UDF-MRK-028

Date:

September 15, 2023

Description:

Upland Drainage Feature

Facing North



UDF-MRK-028

Date:

September 15, 2023

Description:

Upland Drainage Feature

Facing South



AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Upland Drainage Feature (UDF) Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

UDF-MRK-028 **Date:** September 15, 2023 **Description:** Upland Drainage Feature Facing Substrate	

UDF-MRK-029 **Date:** September 26, 2023 **Description:** Upland Drainage Feature Facing North	

AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Upland Drainage Feature (UDF) Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

UDF-MRK-029 **Date:** September 26, 2023 **Description:** Upland Drainage Feature Facing South	

UDF-MRK-029 **Date:** September 26, 2023 **Description:** Upland Drainage Feature Facing Substrate	

AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Upland Drainage Feature (UDF) Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

UDF-MRK-030

Date:

September 26, 2023

Description:

Upland Drainage Feature

Facing North



UDF-MRK-030

Date:

September 26, 2023

Description:

Upland Drainage Feature

Facing South



AECOM Imagine it. Delivered.	**PHOTOGRAPHIC RECORD** **Upland Drainage Feature (UDF)** **Photograph Record**	
Client Name: AEP	**Site Location:** Vassell - Green Chapel North Project	**Project No.** 60702685

UDF-MRK-030	
Date: September 26, 2023	
Description: Upland Drainage Feature Facing Substrate	

APPENDIX E

HABITAT PHOTOGRAPHIC RECORD

AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Habitat Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-1

Date:

June 7, 2023

Description:

Old Field

Facing North



PH-2

Date:

June 7, 2023

Description:

Woodlands

Facing North



Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-3 **Date:** June 7, 2023 **Description:** Old field Facing North	

PH-4 **Date:** September 11, 2023 **Description:** Old field Facing North	

PH-5 **Date:** September 11, 2023 **Description:** Agriculture Facing North	

PH-6 **Date:** September 11, 2023 **Description:** Agriculture Facing North	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-7 **Date:** June 14, 2023 **Description:** Agriculture Facing North	

PH-8 **Date:** June 14, 2023 **Description:** Woodlands - Deciduous Facing North	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-9 **Date:** June 14, 2023 **Description:** Agriculture Facing North	

PH-10 **Date:** September 12, 2023 **Description:** Agriculture Facing North	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-11 **Date:** September 12, 2023 **Description:** Old field Facing North	

PH-12 **Date:** September 12, 2023 **Description:** Agriculture Facing North	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-13 **Date:** September 12, 2023 **Description:** Agriculture Facing North	

PH-14 **Date:** September 12, 2023 **Description:** Agriculture Facing North	

PH-15 **Date:** September 12, 2023 **Description:** Agriculture Facing North	

PH-16 **Date:** December 06, 2023 **Description:** Pond/Stream/Wetland Facing North	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-17 **Date:** December 06, 2023 **Description:** Agricultural Row-Crop Facing North	

PH-18 **Date:** June 14, 2023 **Description:** Woodland-Deciduous Facing North	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-19 **Date:** June 22, 2023 **Description:** Agriculture Facing North	

PH-20 **Date:** June 14, 2023 **Description:** Agriculture Facing South	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-21 **Date:** June 14, 2023 **Description:** Agriculture Facing North	

PH-22 **Date:** June 14, 2023 **Description:** Agriculture Facing East	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-23 **Date:** June 14, 2023 **Description:** Agriculture Facing North	

PH-24 **Date:** September 26, 2023 **Description:** Agriculture Facing North	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-25 **Date:** June 26, 2023 **Description:** Agriculture Facing North	

PH-26 **Date:** December 06, 2023 **Description:** Agriculture Facing North	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-27 **Date:** June 26, 2023 **Description:** Agriculture Facing North	

PH-28 **Date:** September 26, 2023 **Description:** Agriculture Facing North	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-29 **Date:** September 26, 2023 **Description:** Landscaped Facing North	

PH-30 **Date:** June 22, 2023 **Description:** Old Field Facing North	

PH-31

Date:

June 22, 2023

Description:

Agriculture

Facing North



PH-32

Date:

June 22, 2023

Description:

Agriculture

Facing North



Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-33 **Date:** June 22, 2023 **Description:** Agriculture Facing North	

PH-34 **Date:** June 26, 2023 **Description:** Agriculture Facing North	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-35 **Date:** June 14, 2023 **Description:** Agriculture Facing North	

PH-36 **Date:** September 13, 2023 **Description:** Agriculture Facing East	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-37 **Date:** June 21, 2023 **Description:** Agriculture Facing East	

PH-38 **Date:** December 1, 2023 **Description:** Woodlands Facing North	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-39 **Date:** December 1, 2023 **Description:** Agricultural Row-Crop Facing North	

PH-40 **Date:** June 16, 2023 **Description:** Agriculture Facing East	

Case No. 24-0014-EL-BLN

Part 9 of 9

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-41 **Date:** September 13, 2023 **Description:** Agriculture Facing East	

PH-42 **Date:** September 13, 2023 **Description:** Woodlands Facing East	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-43 **Date:** June 15, 2023 **Description:** Agriculture Facing East	

PH-44 **Date:** June 15, 2023 **Description:** Agriculture Facing East	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-45 **Date:** June 15, 2023 **Description:** Agriculture Facing North	

PH-46 **Date:** June 15, 2023 **Description:** Woodland–Deciduous Facing East	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-47 **Date:** June 15, 2023 **Description:** Agriculture Facing East	

PH-48 **Date:** June 27, 2023 **Description:** Agriculture Facing East	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-49 **Date:** June 27, 2023 **Description:** Woodlands Facing East	

PH-50 **Date:** June 27, 2023 **Description:** Agriculture Facing East	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-51 **Date:** June 27, 2023 **Description:** Agriculture Facing South	

PH-52 **Date:** June 27, 2023 **Description:** Agriculture Facing East	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-53 **Date:** June 27, 2023 **Description:** Agriculture Facing East	

PH-54 **Date:** June 27, 2023 **Description:** Agriculture Facing North	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-55 **Date:** June 27, 2023 **Description:** Pasture Facing North	

PH-56 **Date:** September 14, 2023 **Description:** Wetland Facing North	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-57 **Date:** September 14, 2023 **Description:** Agriculture Facing North	

PH-58 **Date:** June 16, 2023 **Description:** Agriculture Facing East	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-59 **Date:** June 16, 2023 **Description:** Agriculture Facing North	

PH-60 **Date:** June 16, 2023 **Description:** Agriculture Facing North	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-61 **Date:** June 16, 2023 **Description:** Agriculture Facing North	

PH-62 **Date:** June 16, 2023 **Description:** Woodland - Deciduous Facing North	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-63 **Date:** June 16, 2023 **Description:** Agriculture Facing North	

PH-64 **Date:** June 16, 2023 **Description:** Pasture Facing North	

AECOM Imagine it. Delivered.

PHOTOGRAPHIC RECORD
Habitat Photograph Record

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-65 **Date:** September 15, 2023 **Description:** Pasture Facing North	

PH-66 **Date:** September 15, 2023 **Description:** Woodland Facing East	

Client Name:	Site Location:	Project No.
AEP	Vassell - Green Chapel North Project	60702685

PH-67 **Date:** June 16, 2023 **Description:** Landscaped Facing North	

PH-68 **Date:** June 16, 2023 **Description:** Old field Facing North	

APPENDIX F

AGENCY CORRESPONDENCE

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Ecological Services
4625 Morse Road, Suite 104
Columbus, Ohio 43230
(614) 416-8993 / FAX (614) 416-8994

September 11, 2023

Project Code: 2023-0125820

Dear Anna Findish:

The U.S. Fish and Wildlife Service (Service) has received your recent correspondence requesting information about the subject proposal. We offer the following comments and recommendations to assist you in minimizing and avoiding adverse impacts to threatened, endangered, and proposed species pursuant to the Endangered Species Act of 1973 (16 U.S.C. 1531 et seq), as amended (ESA).

Federally Threatened and Endangered Species: The endangered Indiana bat (*Myotis sodalis*) and northern long-eared bat (*Myotis septentrionalis*) occur throughout the State of Ohio. The Indiana bat and northern long-eared bat may be found wherever suitable habitat occurs unless a presence/absence survey has been performed to document absence. Suitable summer habitat for Indiana bats and northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and breed that may also include adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, woodlots, fallow fields, and pastures. Roost trees for both species include live and standing dead trees ≥3 inches diameter at breast height (dbh) that have any exfoliating bark, cracks, crevices, hollows and/or cavities. These roost trees may be located in forested habitats as well as linear features such as fencerows, riparian forests, and other wooded corridors. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet of other forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat. In the winter, Indiana bats and northern long-eared bats hibernate in caves, rock crevices and abandoned mines.

Federally Proposed Species: On September 14, 2022, the Service proposed to list the tricolored bat (*Perimyotis subflavus*) as endangered under the ESA. The bat faces extinction due to the impacts of white-nose syndrome, a deadly disease affecting cave-dwelling bats across the continent. During spring, summer, and fall, this species roosts primarily among leaf clusters of live or recently dead trees, emerging at dusk to hunt for insects over waterways and forest edges. While white-nose syndrome is by far the most serious threat to the tricolored bat, other threats now have an increased significance due to the dramatic decline in the species' population. These threats include disturbance to bats in roosting, foraging, commuting, and over-wintering habitats. Mortality due to collision with wind turbines, especially during migration, has also been documented across their range. Conservation measures for the Indiana bat and northern long-eared bat will also help to conserve the tricolored bat.

Seasonal Tree Clearing for Federally Listed Bat Species: Should the proposed project site contain trees ≥3 inches dbh, we recommend avoiding tree removal wherever possible. If any caves or abandoned mines may be disturbed, further coordination with this office is requested to determine if fall or spring portal surveys are warranted. If no caves or abandoned mines are present and trees ≥3 inches dbh cannot be avoided, we recommend removal of any trees ≥3 inches dbh only occur between October 1 and March 31. Seasonal clearing is recommended to avoid adverse effects to Indiana bats and northern long-eared bats.

If implementation of this seasonal tree cutting recommendation is not possible, a summer presence/absence survey may be conducted for Indiana bats and northern long-eared bats. If Indiana bats and northern long-eared bats are not detected during the survey, then tree clearing may occur at any time of the year. Surveys must be conducted by an approved surveyor and be designed and conducted in coordination with the Ohio Field Office. Surveyors must have a valid federal permit. Please note that in Ohio summer mist net surveys may only be conducted between June 1 and August 15.

Section 7 Coordination: If there is a federal nexus for the project (e.g., federal funding provided, federal permits required to construct), then no tree clearing should occur on any portion of the project area until consultation under section 7 of the ESA, between the Service and the federal action agency, is completed. We recommend the federal action agency submit a determination of effects to this office, relative to the Indiana bat and northern long-eared bat, for our review and concurrence. This letter provides technical assistance only and does not serve as a completed section 7 consultation document.

Stream and Wetland Avoidance: Over 90% of the wetlands in Ohio have been drained, filled, or modified by human activities, thus is it important to conserve the functions and values of the remaining wetlands in Ohio (https://epa.ohio.gov/portals/47/facts/ohio_wetlands.pdf). We recommend avoiding and minimizing project impacts to all wetland habitats (e.g., forests, streams, vernal pools) to the maximum extent possible in order to benefit water quality and fish and wildlife habitat. Additionally, natural buffers around streams and wetlands should be preserved to enhance beneficial functions. If streams or wetlands will be impacted, the U.S. Army Corps of Engineers should be contacted to determine whether a Clean Water Act section 404 permit is required. Best management practices should be used to minimize erosion, especially on slopes. Disturbed areas should be mulched and revegetated with native plant species. In addition, prevention of non-native, invasive plant establishment is critical in maintaining high quality habitats.

Due to the project type, size, and location, we do not anticipate adverse effects to any other federally endangered, threatened, or proposed species, or proposed or designated critical habitat. Should the project design change, or additional information on listed or proposed species or their critical habitat become available, or if new information reveals effects of the action that were not previously considered, coordination with the Service should be initiated to assess any potential impacts.

Thank you for your efforts to conserve listed species and sensitive habitats in Ohio. We recommend coordinating with the Ohio Department of Natural Resources due to the potential for the proposed project to affect state listed species and/or state lands. Contact Mike Pettegrew, Environmental Services Administrator, at (614) 265-6387 or at mike.pettegrew@dnr.ohio.gov.

If you have questions, or if we can be of further assistance in this matter, please contact our office at (614) 416-8993 or ohio@fws.gov.

Sincerely,



Scott Hicks
Acting Field Office Supervisor

cc: Nathan Reardon, ODNR-DOW
Eileen Wyza, ODNR-DOW

Office of Real Estate
Tara Paciorek, Chief
2045 Morse Road – Bldg. E-2
Columbus, OH 43229
Phone: (614) 265-6661
Fax: (614) 267-4764

October 13, 2023

Anna Findish
AECOM
707 Grant Street
Pittsburgh, Pennsylvania 15219

Re: 23-1066; AEP Vassell - Green Chapel North Enhancement

Project: The proposed project involves the implementation of improvements between the existing Vassell Station and a proposed station (approximately 12.4 miles).

Location: The proposed project is located in Berkshire, Trenton, and Harlem townships, Delaware County, and Monroe and Jersey townships, Licking County, Ohio.

The Ohio Department of Natural Resources (ODNR) has completed a review of the above referenced project. These comments were generated by an inter-disciplinary review within the Department. These comments have been prepared under the authority of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.), the National Environmental Policy Act, the Coastal Zone Management Act, Ohio Revised Code and other applicable laws and regulations. These comments are also based on ODNR's experience as the state natural resource management agency and do not supersede or replace the regulatory authority of any local, state, or federal agency nor relieve the applicant of the obligation to comply with any local, state, or federal laws or regulations.

Natural Heritage Database: A review of the Ohio Natural Heritage Database indicates there are no records of state or federally listed plants or animals within one mile of the specified project area. Records searched date from 1980.

Please note that Ohio has not been completely surveyed and we rely on receiving information from many sources. Therefore, a lack of records for any particular area is not a statement that rare species or unique features are absent from that area.

Fish and Wildlife: The Division of Wildlife (DOW) has the following comments.

The DOW recommends that impacts to streams, wetlands and other water resources be avoided and minimized to the fullest extent possible, and that Best Management Practices be utilized to minimize erosion and sedimentation.

The portion of the project south of Duncan Plains Road is within the vicinity of records for the northern long-eared bat (*Myotis septentrionalis*), a state endangered and federally endangered species. Because presence of state endangered bat species has been established in this area, summer tree cutting is not recommended, and additional summer surveys would not constitute presence/absence in the area. However, limited summer tree cutting inside this buffer may be

acceptable after further consultation with DOW (contact Eileen Wyza at Eileen.Wyza@dnr.ohio.gov).

In addition, the entire state of Ohio is within the range of the Indiana bat (*Myotis sodalis*), a state endangered and federally endangered species, the northern long-eared bat (*Myotis septentrionalis*), a state endangered and federally endangered species, the little brown bat (*Myotis lucifugus*), a state endangered species, and the tricolored bat (*Perimyotis subflavus*), a state endangered species. During the spring and summer (April 1 through September 30), these bat species predominately roost in trees behind loose, exfoliating bark, in crevices and cavities, or in the leaves. The DOW recommends tree cutting only occur from October 1 through March 31, conserving trees with loose, shaggy bark and/or crevices, holes, or cavities, as well as trees with DBH ≥ 20 if possible. However, if trees are present within this area, (outside of the area delineated above) and trees must be cut during the summer months, the DOW recommends a mist net survey or acoustic survey be conducted from June 1 through August 15, prior to any cutting. Mist net and acoustic surveys should be conducted in accordance with the most recent version of the "*OHIO DIVISION OF WILDLIFE GUIDANCE FOR BAT SURVEYS AND TREE CLEARING*". If state listed bats are documented, DOW recommends cutting only occur from October 1 through March 31. However, limited summer tree cutting may be acceptable after consultation with the DOW.

The DOW also recommends that a desktop habitat assessment is conducted, followed by a field assessment if needed, to determine if a potential hibernaculum is present within the project area. Direction on how to conduct habitat assessments can be found in the current USFWS "*RANGE-WIDE INDIANA BAT & NORTHERN LONG-EARED BAT SURVEY GUIDELINES*." If a habitat assessment finds that a potential hibernaculum is present within 0.25 miles of the project area, please send this information to Eileen Wyza, for project recommendations. If a potential or known hibernaculum is found, the DOW recommends a 0.25-mile tree cutting and subsurface disturbance buffer around the hibernaculum entrance, however, limited summer or winter tree cutting may be acceptable after consultation with the DOW. If no tree cutting or subsurface impacts to a hibernaculum are proposed, this project is not likely to impact these species.

This project is within the range of the following listed mussel species.
Federally Endangered
rayed bean (*Villosa fabalis*)
snuffbox (*Epioblasma triquetra*)

Federally Threatened
rabbitsfoot (*Quadrula cylindrica cylindrica*)

State Threatened
Salamander Mussel (*Simpsonaias ambigua*)
pondhorn (*Uniomerus tetralasmus*)

This project must not have an impact on native mussels. This applies to both listed and non-listed species, as all species of mussel are protected in Ohio. Per the Ohio Mussel Survey Protocol (2022), all Group 2, 3, and 4 streams (Appendix A) require a mussel survey. Per the Ohio Mussel Survey Protocol, Group 1 streams (Appendix A) and unlisted streams with a watershed of 5 square miles or larger above the point of impact should be assessed using the Reconnaissance Survey for Unionid Mussels (Appendix B) to determine if mussels are present. Mussel surveys may be recommended for these streams as well. Therefore, if in-water work is planned in any stream that meets any of the above criteria, the DOW recommends the applicant provide

information to indicate no mussel impacts will occur. If this is not possible, the DOW recommends a professional malacologist conduct a mussel survey in the project area. If mussels that cannot be avoided are found in the project area, the DOW recommends a professional malacologist collect and relocate the mussels to suitable and similar habitat upstream of the project site. Mussel surveys and any subsequent mussel relocation should be done in accordance with the Ohio Mussel Survey Protocol. If there is no in-water work proposed, impacts to mussels are not likely.

The DOW recommends no in-water work in perennial streams from March 15 through June 30 to reduce impacts to indigenous aquatic species and their habitat. If no in-water work is proposed in a perennial stream, this project is not likely to impact aquatic species.

The project is within the range of the northern harrier (*Circus hudsonius*), a state endangered bird. This is a common migrant and winter species. Nesters are much rarer, although they occasionally breed in large marshes and grasslands. Harriers often nest in loose colonies. The female builds a nest out of sticks on the ground, often on top of a mound. Harriers hunt over grasslands. If this type of habitat will be impacted, construction should be avoided in this habitat during the species' nesting period of April 15 through July 31. If this habitat will not be impacted, this project is not likely to impact this species.

Due to the potential of impacts to federally listed species, as well as to state listed species, we recommend that this project be coordinated with the US Fish & Wildlife Service.

Water Resources: The Division of Water Resources has the following comment.

The local floodplain administrator should be contacted concerning the possible need for any floodplain permits or approvals for this project.

ODNR appreciates the opportunity to provide these comments. Please contact Mike Pettegrew at mike.pettegrew@dnr.ohio.gov if you have questions about these comments or need additional information.

Mike Pettegrew
Environmental Services Administrator

APPENDIX G

2023 JOINT GUIDANCE

OHIO DIVISION OF WILDLIFE AND U.S. FISH AND WILDLIFE SERVICE (OH-FIELD OFFICE) JOINT GUIDANCE FOR BAT SURVEYS AND TREE CLEARING MAY 2023

This document has been updated with new state guidance for the 2023 field season.

This guidance applies to state recommendations only. Contact the USFWS to determine if federal consultation is also necessary to comply with federal law.

Agency Contacts:

ODNR-DOW Permit Coordinator: Wildlife.Permits@dnr.ohio.gov, (614) 265-6315
ODNR-DOW Bat Survey Coordinator: Eileen Wyza, Eileen.Wyza@dnr.ohio.gov, (614) 265-6764
USFWS OHFO Endangered Species: Angela Boyer, angela_boyer@fws.gov, (614) 416-8993, ext.122

Covid-19 Guidance:

Surveyors should follow all covid protocols put in place by their agency. All surveyors should wear masks when handling bats and anyone exhibiting symptoms of covid-19 should not participate in bat surveys.

Ohio Mist-net Surveys:

This document serves as guidance for bat mist netting activities in Ohio and does not supersede any requirements listed on your permits or facility certificate. All permit conditions must be strictly adhered to for permits to be valid and for renewal of permits beyond the existing year.

Due to the presence of White-nose Syndrome (WNS), mist-netting in Ohio must be conducted between June 1 and August 15 unless stated otherwise in your state permit. The ODNR Division of Wildlife (ODNR-DOW) and U.S. Fish and Wildlife Service (USFWS) Ohio Field Office (OHFO) have determined that delaying netting activities until June 1 will provide additional recovery time for bats affected by WNS. For presence/probable absence surveys, netting will not be accepted outside of the June 1 - August 15 timeframe.

To assess project areas for presence or probable absence of the state and federally listed Indiana bat (*Myotis sodalis*) and northern long-eared bat (*Myotis septentrionalis*) during summer residency, the USFWS developed the USFWS Range-wide Indiana Bat and Northern Long-eared Bat Summer Survey Guidelines (March 2023). This protocol, **with minor modifications referenced below**, can also be used in Ohio for the 2023 field season and includes surveying for the state-listed little brown bat (*Myotis lucifugus*) and tricolored bat (*Perimyotis subflavus*).

According to the updated federal range-wide guidelines, presence/probable absence net surveys for northern long-eared bats shall incorporate either 10 net nights per square 0.5 kilometer (123 acres) of project area, or four net nights per kilometer for linear projects. Presence/probable absence net surveys for Indiana bats shall incorporate six net nights per square 0.5 kilometer (123 acres) of project area, or two net nights per kilometer for linear

projects. If a project area is eligible for a presence/probable absence survey for both Indiana bats and northern long-eared bats, following the northern long-eared bat level of effort will qualify as a presence/ probable absence survey for both species. However, if a project area is eligible for a presence/absence survey for both species, following the Indiana bat level of effort will not qualify the survey for a northern long-eared bat presence/ probable absence survey. Please note that the USFWS Range-wide Indiana Bat and Northern Long-eared Bat Summer Survey Guidelines (March 2023) requires that a minimum of two (2) biologists (e.g., one permitted and one technician) must be on-site for every four (4) net-sets being operated. Exceptions to on-site minimum staffing levels may be allowed under extenuating circumstances, provided written justification is included in the proposed survey study plan and subsequently approved by the OHFO and ODOW.

Due to the reclassification of the northern long-eared bat on March 31, 2023, the previous northern long-eared bat 4(d) rule has been nullified. There is a new online tool in the USFWS's Information for Planning and Consultation (IPaC) website that allows project proponents to utilize a determination key (Dkey) for the northern long-eared bat. **The Dkey cannot be used to replace consultation with ODNR-DOW.** Project proponents should coordinate directly with the ODNR-DOW and the OHFO for project technical assistance for all federally listed species, including the Indiana bat and northern long-eared bat.

The tricolored bat is listed as endangered by ODNR-DOW. Additionally, the USFWS published a proposed rule to list the tri-colored bat as endangered on September 14, 2022. The USFWS is scheduled to publish a final rule on the tricolored bat's status by the end of September 2023 which could affect future project development. Therefore, in anticipation of this listing we recommend that project proponents coordinate with the OHFO in addition to ODNR-DOW to determine if the project could benefit from formal coordination with USFWS for tricolored bat. The USFWS Range-wide Indiana Bat and Northern Long-eared Bat Summer Survey Guidelines (March 2023) allows presence/absence surveys for the tricolored bat that use the northern long-eared bat level of effort.

Exception for Ohio mist-net surveys: All presence/absence surveys conducted for state listed bat species (Indiana, northern long-eared, little brown, tricolored) should follow the maximum net nights set forth in the federal guidance to be considered valid by ODNR-DOW. Any modifications to this position will be communicated at the time of the site authorization approval.

Ohio Acoustic Surveys:

Acoustic bat surveys for presence/absence will be accepted by ODNR-DOW for the 2023 season. Surveys should follow guidelines laid out in the USFWS Range-wide Indiana Bat and Northern Long-eared Bat Summer Survey Guidelines (March 2023) with the following exceptions:

- Ohio survey dates are June 1 – August 15, 2022
- After conducting automated analyses using one or more of the currently available 'approved' acoustic bat ID programs[1], qualitative analysis (i.e., manual vetting) of any calls recorded from state-endangered species (*M. sodalis, M. septentrionalis*[2]*, M. lucifugus*[2]*,* and *P. subflavus*[2]) must be completed.
- **All presence/absence acoustic surveys conducted for state listed bat species (Indiana, northern long-eared, little brown, tricolored) should follow the maximum acoustic nights set forth in the federal guidance to be considered valid by ODNR-DOW. Any modifications to this position will be communicated at the time of the site authorization approval.**

At a minimum, for each detector site/night a program considered presence of state-listed bats likely, review all files (including no IDs) from that site/night. If more than one acoustic bat ID program is used, qualitative analysis must also include a comparison of the results of each program by site and night.

[1] https://www.fws.gov/media/indiana-bat-summer-survey-guidance

[2] State listing as endangered effective July 1, 2020

Combined Mist-netting and Acoustic Surveys:
ODNR-DOW will accept the USFWS pilot survey option of combining mist-netting and acoustic surveys for traditional survey sites (e.g., 123-acre area) detailed in Appendix I of the USFWS Range-wide Indiana Bat and Northern Long-eared Bat Summer Survey Guidelines (2023). All presence/absence combined mist-net and acoustic surveys conducted for state listed bat species should follow the maximum level of effort set forth by the federal guidance to be considered valid by ODNR-DOW. Any modifications to this position will be communicated at the time of the site authorization approval.

Before Field Season:

- Anyone surveying bats using mist-nets in the state of Ohio must obtain a federal permit as well as a state scientific collection permit. The federal permit should include both the Indiana bat and the northern long-eared bat.
- Your ODNR-DOW permit consists of two documents: a Scientific Collector (Wild Animal) Permit and an endangered species letter signed by the Chief of the Division of Wildlife (in addition to your federal permit). Both ODNR-DOW documents must be obtained prior to field work and kept with you and any sub-permittees during field work.

During Field Season:

- Prior to initiation of field work (a minimum of two weeks in advance), permittees must provide proposed mist netting plans to USFWS and ODNR-DOW in the form of an e-mail letter to the USFWS OHFO and copy to the ODNR-DOW Bat Survey Coordinator. Plans must be reviewed and approved by USFWS OHFO and ODNR-DOW before ANY surveys take place. Study plans must specify objectives, location details, dates of proposed work, and all other relevant details. **Study plans must also include a USFWS Project Code. Project Codes can only be obtained by requesting an official species list through the USFWS's Information for Planning and Consultation (IPaC) website (https://ipac.ecosphere.fws.gov/).** When handling bats, you must strictly adhere to the current WNS Decontamination Protocol (current version can be found at https://www.whitenosesyndrome.org/topics/decontamination). Clothing, boots, gear, and equipment should all be thoroughly decontaminated between nights, as well as between netting sites.
- Request bat bands at least two weeks in advance of needing them. Bat bands can be obtained by e-mailing the ODNR-DOW Bat Survey Coordinator with how many bands are needed, current permit number, sizes, and a mailing address. Bands will not be issued until your permits are valid. We have two sizes of bands—2.4 mm and 4.2 mm. The 2.4 mm split metal bat ring made of aluminum alloy is suitable for banding small bats. This band must be placed on all captured Indiana, northern long-eared, little brown, and tricolored bats. The larger 4.2 mm band is suitable for silver-haired (*Lasionycteris noctivagans*), big brown (*Eptesicus fuscus*), and hoary (*Lasiurus cinereus*) bats. You must band all Indiana, northern long-eared, little brown, and tricolored bats with ODNR-DOW bands; therefore, you should not be in the field without the 2.4 mm sized band.
- Only individuals who are named on the ODNR-DOW endangered species letter portion of the permit and on the corresponding federal bat permit may conduct and oversee mist-net surveys. Trained assistants may work on permitted bat activities under the direct and on-site supervision of a named permittee. All bat IDs must be verified by a named permittee. If an Indiana bat and/or northern long-eared bat is captured, the permittee shall notify the USFWS and the ODNR-DOW Bat Survey Coordinator referenced above within 48 hours via email. If a little brown bat or tricolored bat is captured, notify the ODNR-DOW Bat Survey Coordinator only within 48 hours via email. Reports of listed bat captures should include specific information such as spatial location of capture, band information, radio-transmitter frequency information, sex, reproductive status, and age of individual.
- For presence/absence surveys, ODNR-DOW requires all female and juvenile state endangered and threatened bat species (Indiana, northern long-eared, little brown, and tricolored bat) be radio-tracked if

caught, in accordance with methods outlined in Appendix D of USFWS 2022 Range-wide Indiana Bat Summer Survey Guidelines.

• If you are taking any biological samples (tissue, fur, blood, etc.), this must be specifically authorized in your state and federal permits and noted in your survey proposal.

After Field Season:

By March 15, you must submit your final ODNR-DOW report(s) from the previous summer. You are not required to fill out the ODNR-DOW Wildlife Diversity Bat Excel Spreadsheet; instead, please forward your USFWS Midwestern US Spreadsheet (found here: https://www.fws.gov/media/bat-reporting-spreadsheets-2020-2021) to the ODNR-DOW Bat Survey Coordinator and ODNR-DOW Permit Coordinator and include your state permit number along with an electronic copy of the project report. Electronic summaries emailed during the field season are NOT considered as full compliance of this reporting requirement.

Ohio Environmental Review Recommendations for projects involving disturbance near potential/known bat hibernacula (cliffs, caves, mines) or tree cutting:

Step 1: Coordinate with Ohio Division of Wildlife (DOW) regarding existing records for state-listed endangered bat summer and/or winter occurrence information. Potential hibernacula found during a habitat assessment must address possible suitability for Indiana bats, northern long-eared bats, tricolored bats, and little brown bats.

If project site contains a known bat hibernaculum(a) –

- For state-listed endangered species other than the Indiana bat and northern long-eared bat, a recommendation of 0.25-mile tree cutting buffer around all known entrances to protect existing conditions at the hibernaculum(a). The U.S. Fish and Wildlife Service (USFWS) should be contacted for guidance on projects occurring within 5 miles of known or potential Indiana bat and/or northern long-eared bat hibernacula. If the project involves subsurface disturbance, consultation with DOW is required.
- Limited tree cutting may be permitted within the buffer. Coordinate with DOW.

If a project site does not contain known bat hibernaculum(a)

- Conduct a desktop habitat assessment of the project area. Tools such as the ODNR Mines of Ohio Viewer, Karst Interactive Map, topographic maps, aerial photos, historical records, etc. should be used to determine if there are any potential caves, mines, karst features, rock ledges, or other features that may serve as potential hibernacula.
  - If no such features are found, proceed to Step 2.
  - If potential hibernacula are found during the desktop assessment:
    - Assume bats are using these hibernacula and refrain from clearing trees from March 15-November 15

-Or-

- Conduct a field habitat assessment to determine if a potential hibernaculum(a) is present within the action area. We encourage impacts to ledges and rock outcroppings be avoided. If impacts cannot be avoided, features should be evaluated for potential roosting characteristics such as recesses, overhangs, and crevices.
- **NOTE**: The USFWS Range-wide Indiana Bat Guidelines, Appendix H, contains instructions for completing a habitat assessment, but only includes criteria for Indiana bat hibernacula.

Step 2: When conducted, a presence/absence survey must follow current DOW guidelines.

Step 3: If a state-listed endangered bat is captured or recorded during the survey:

- Recommendation of no summer tree cutting, or limited cutting following guidelines detailed below, within 5 miles (or 2.5 miles for tricolored bats) of the capture site if a roost is not located.
- Recommendation of no summer tree cutting, or limited cutting following guidelines detailed below, within 2.5 miles of a roost tree if located.

If no state-listed endangered bat is captured or recorded during the survey:

- Summer tree cutting may proceed for 5 years before a new survey is needed under state guidance.

Limited summer tree cutting guidance for bats that are only state-listed endangered: Limited tree cutting in summer may be permitted after consultation with DOW, but clearing trees with the following characteristics should be avoided unless they pose a hazard: dead or live trees of any size with loose, shaggy bark; crevices, holes, or cavities; clusters of dead leaves; live trees of any species with DBH ≥ 20".

FREQUENTLY ASKED QUESTIONS

When does the ODNR-DOW Bat Survey protocol have to be used?

This protocol should be used anytime Indiana bat, northern long-eared bat, little brown bat, or tricolored bat summer presence/probable absence surveys are conducted in the state of Ohio.

How many detector nights are required for presence/probable absence acoustic surveys?

As described in the current USFWS Range-wide Indiana Bat and Northern Long-eared Bat Summer Survey Guidelines:

Level of effort for all state-listed endangered bat species including Indiana bat and northern long-eared bats: Follow maximum detector nights as outlined in the federal guidance (for northern long-eared bat).

Northern Long-eared Bat Level of Effort:
Linear projects: a minimum of 4 detector nights per km (0.6 miles) of suitable summer habitat
Non-linear projects: a minimum of 14 detector nights per 123 acres (0.5 km^2) of suitable summer habitat.
At least 2 detector locations per 123 acre "site" shall be sampled until at least 8 detector nights has been completed over the course of at least 2 calendar nights (may be consecutive). For example:
- 4 detectors for 3 nights and 1 detector for 2 nights each (can sample the same location or move within the site)
- 2 detectors for 7 nights each (can sample the same location or move within the site)
- 1 detector for 14 nights (must sample at least 2 locations and move within the site – we recommend evenly distributing LOE among locations)

Indiana Bat Level of Effort:
Linear projects: a minimum of 4 detector nights per km (0.6 miles) of suitable summer habitat
Non-linear projects: a minimum of 10 detector nights per 123 acres (0.5 km^2) of suitable summer habitat.
At least 2 detector locations per 123 acre "site" shall be sampled until at least 8 detector nights has been completed over the course of at least 2 calendar nights (may be consecutive). For example:
- 5 detectors for 2 nights each (can sample the same location or move within the site)
- 2 detectors for 5 nights each (can sample the same location or move within the site)
- 1 detector for 10 nights (must sample at least 2 locations and move within the site – we recommend evenly distributing LOE among locations)

How many net surveys are required for presence/probable absence?

Level of effort for all state-listed endangered bat species including Indiana bat and northern long-eared bats: Follow maximum net nights as outlined in the federal guidance (for northern long-eared bat).

Net surveys for northern long-eared bat presence/probable absence shall incorporate, at a minimum, either 10 net nights per square 0.5 kilometer (123 acres) of project area, or four net nights per kilometer for linear projects. For linear projects, there must be at least one net night of survey on two different nights (minimum of two nights). This does not allow for two net nights on a single night for surveys.

Net surveys for Indiana bat presence/probable absence shall incorporate, at a minimum, either six net nights net nights per square 0.5 kilometer (123 acres) of project area, or two net nights per kilometer for linear projects. For linear projects, there must be at least one net night of survey on two different nights (minimum of two nights). This

does not allow for two net nights on a single night for surveys.

How long are the results of the surveys valid for an assessment of an area?

Mist-net or acoustic surveys documenting probable absence of state-listed endangered bats are valid for five years.

When can acoustic or net surveys occur in Ohio?

In Ohio, acoustic or net surveys may only be conducted from June 1 through August 15 unless indicated otherwise in your state permit. Any surveys outside of the June 1 - August 15 timeframe cannot be used in Ohio to assess the presence/probable absence of state-listed bats.

Can a presence/probable absence survey be conducted within a known Indiana bat and/or northern long-eared bat capture/detection buffer?

Surveys generally cannot be used to document presence/probable absence of state-listed endangered bats where presence of the species has already been confirmed by prior surveys.

What if a project is proposing to clear trees between April 1 and September 30 when bats may be present but no bat records exist in the project area?

Any Ohio project that is not within a known bat record buffer, and tree clearing between April 1 and September 31 is being proposed, may have a presence/probable absence survey conducted between June 1 and August 15 following the range-wide guidance. If a presence/probable absence survey is not performed, presence of listed bats is assumed.

How does take of northern long-eared bats differ from Indiana bats?

Under Ohio law, there is no exemption for take of any listed bat species.

Where do I get bands?

If you need bands, email the ODNR-DOW Bat Survey Coordinator at least two weeks in advance with your current ODNR permit number, how many bands in each size (2.4 and 4.2 mm) you will need this season, and a current address to ship the bands.

Do I have to band every bat?
No, currently this is optional. However, you are required as per your state permit to band all Indiana, northern long-eared, little brown, and tricolored bats.